

MODERN FORTIFICATION AND WARFARE: GRAPHIC ANALYSIS OF THE SIEGE OF FUENTERRABIA (1638)

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ABSTRACT

Fuenterrabía, one of the most outstanding strongholds of the Basque Country, has historically been a strategic checkpoint on the land crossing between France and the Iberian Peninsula. Due to its military interest, it was many times besieged between the sixteenth and nineteenth centuries for its possession and territorial control.

The siege of Fuenterrabía of 1638 is framed within the Franco-Spanish War (1635-1659) fought parallel to the Thirty Years War (1618-1648). It had essentially a Religious character but it was used as a method of territorial expansion. This permanent state of war allowed a great development of the fortification, transforming the one existing in the Middle Ages by what is now known as Modern Fortification, adapted to the new defensive requirements.

This paper attempts to analyse through the contemporary chronicles how the siege process was developed and the behaviour of the fortification as a war machine facing the enemy offensive. There is no profound analysis of this siege from a heritage point of view. The attacks caused different severity of damage, and the besieged tried to reconstruct their defences and build new elements that hinder the work of the enemy. By graphing the city walls, hypothesis of the consequences are suggested as well as the works the defenders built to compensate them.

Keywords: siege of Fuenterrabía, Modern Fortification, graphic representation

INTRODUCTION

The evolution from the medieval enclosure to the bastioned fortification occurred due to the improvement of weaponry in the second half of the fifteenth century. During the Middle Ages, defensive methods enjoyed supremacy over artillery offensive. The typology of medieval wall that could not stand the onslaught of new weapons or allow the placement and use of artillery in defenders part become obsolete. Only a radical change in the fortification concept could offer to guarantee defence forces surviving a long siege.

In most cases, existing strongholds were transformed. But the fact is that the origin of the bastion derived from the application of triangular polygonal shapes to solve the problems caused by these technical advances in artillery [1]. Talk of potential inventors, Vasari speaks about Sanmichel, De la Croix points to Antonio da Sangallo [2], but the truth is that the bastion was the result of a gradual evolution over several decades with marked isolated milestones [3].

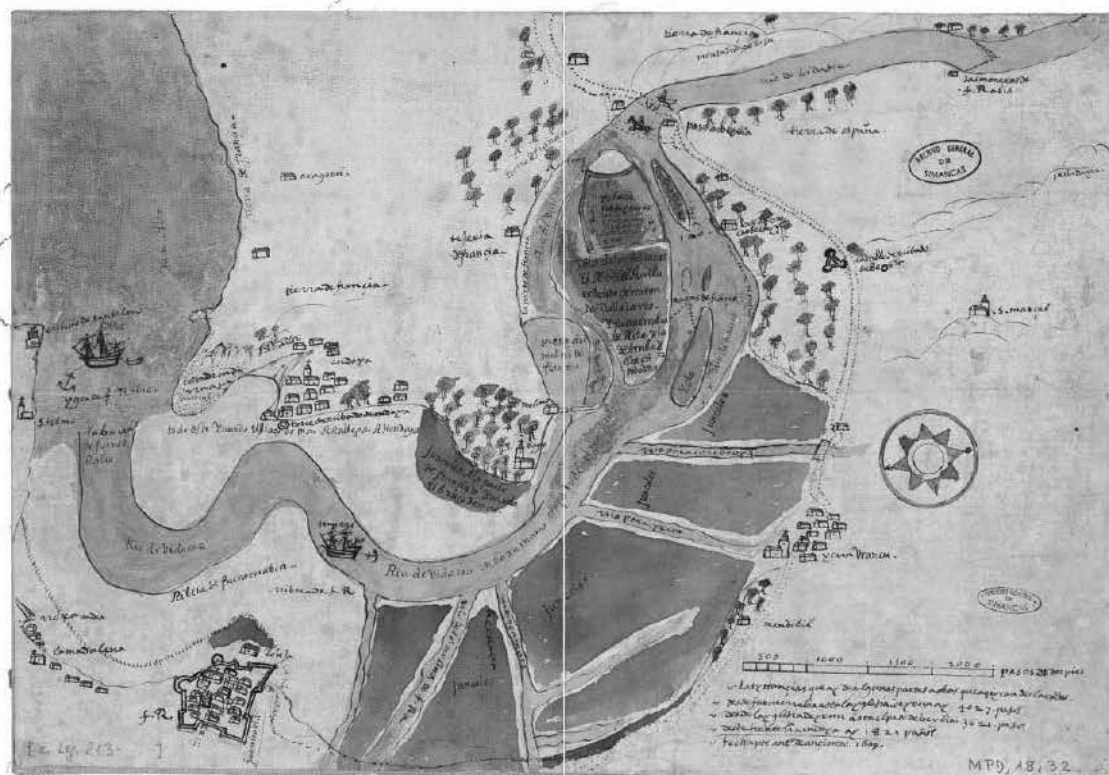


Fig. 1. Bidasoa course between Fuenterrabía and Behobia, 1609, AGS, M.P.D. 18-32

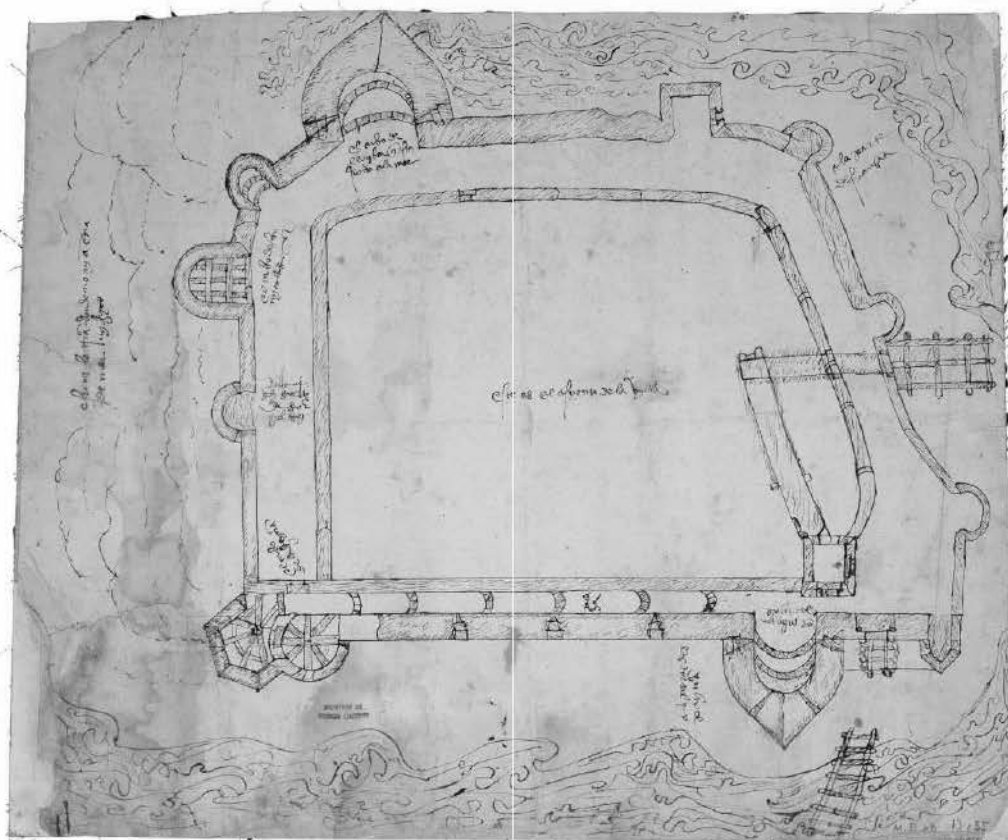


Fig. 2. Fortification plan of Fuenterrabía, around 1630, AGS, M.P.D. 13-55

War periods intensified the building activity in Fuenterrabía to maintain and improve the resisting capacity of the walls from an imminent attack because of its situation. Like other settlements in strategic locations, this town in the Bidasoa mouth and French border (Fig. 1) had from its original foundation medieval walls dominated from the inside by a defensive tower. After the annexation of Navarre to Castile, a boom in defensive constructions was experienced and the Catholic Kings built a castle over the old tower, later extended and restored by Charles V [4].

In mid-sixteenth century this stronghold could be considered as adapted to the principles of bastioned fortification. Towers were lowered as well as walls, and large soil masses contained by walls and finished with ashlar masonry reduced the artillery destructive effect. The first bastions began to appear. This defensive belt was constructed enveloping the medieval one due to the constraints of the terrain, removing or replacing towers by bastions.

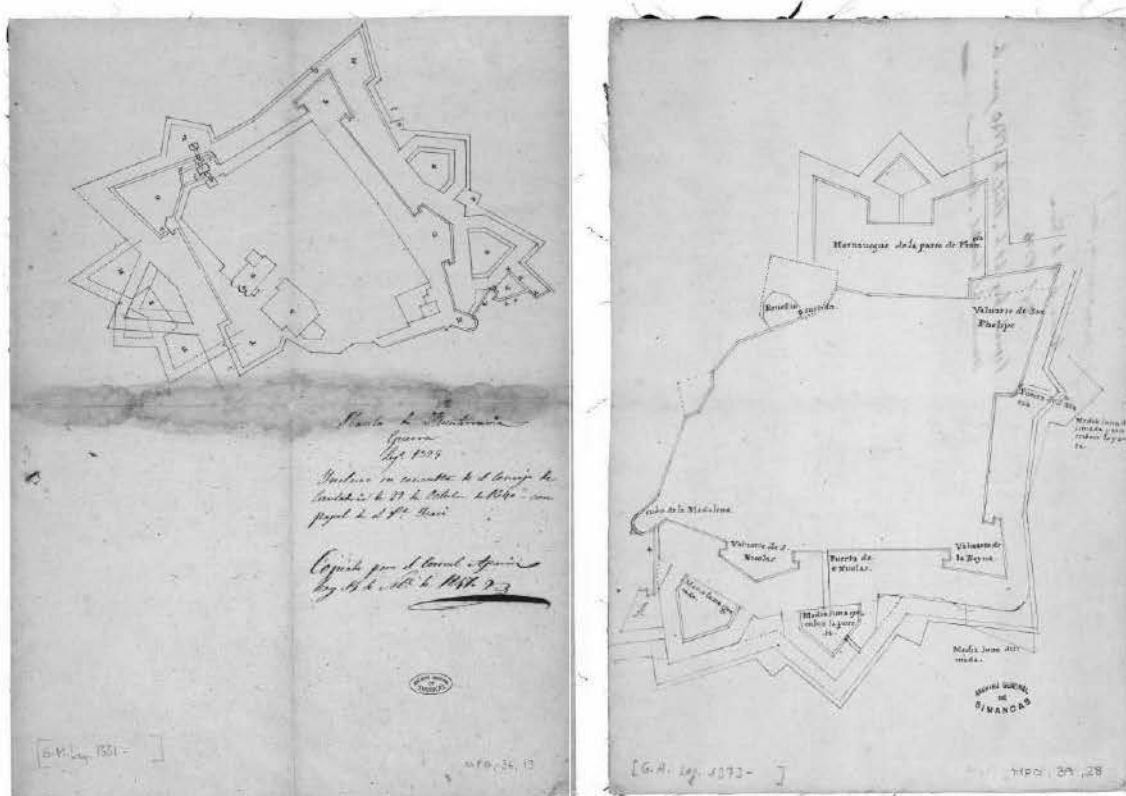


Fig. 3. (Left) Plan of the fortification of Fuenterrabía, year 1640, AGS, M.P.D.36-13. (Right) Plan of the stronghold of Fuenterrabía, year 1641, AGS, M.P.D. 39-28

But the truth is that the real transformation occurred once the modern design of the bastion had matured. As shown in figure 2, dated around 1530 and the first graphic document of these fortifications preserved in the AGS (Archivo General de Simancas), two heart-shaped bastions were planned: the Imperial bastion and the Leyva bastion.

The same had happened in Pamplona with the bastion of San Llorente or San Lorenzo [5], built after the Castilian Cortes of 1532 where it was intended to undertake without fail the completion of the fortifications. The remaining bastions that were built were significantly smaller, carried out two during those years: The Queen bastion and a pentagonal one in the new wall. According to Astiazaráin, they were the work of Pedro

de Guevara and Benedito Ravenna, who had replaced the prestigious engineer Gabriel Ladino di Martinengo [4]. A few years later, other bastions of larger scale and artillery assets were undertaken, such as Magdalena and San Nicolas bastions. Modifications of existing defences were made, but until the siege of 1638, the only construction that was carried out was the stronghold of San Felipe. The Fratin, chief engineer of the kingdom under the reign of Philip II, decided to build this bastion of higher capacity in the south. The work was carried out with the changes or adjustments that Tiburcio Spanochi traced to 1580, but after his death.



Fig. 4. View of the Stronghold of Fuenterrabía. Municipal Archives of Hondarribia.

THE SIEGE OF 1638

The siege of 1638 was significant in the evolution of the walls of Fuenterrabía (Fig. 4). Both bastioned defence systems and techniques that writers had gathered on the systems to besiege a stronghold were tested. By successive approaches, beating the walls and mines, they tried to open a breach through which the invading army could enter and take the village. The consequences on the walls involved numerous projects (for example, Fig. 3) to make the necessary repairs and undertake some outer fortifications as the beginning of a modernization of the enclosure to be held throughout the seventeenth century. But even then there were doubts about its usefulness to defend the border against new artillery systems [6].

In the early spring of that year war rumour was heard. Since the French armies were moving and a siege attempt was expected in any stronghold located at the southern side of the Pyrenees. Troops began to gather in Navarre and Pamplona was manned due to

this imminent danger. Men and women began to prepare the city walls in order to withstand an attack. Moret [7] says the French troops' strategy was to make a feint on one side of the border to actually release elsewhere and surrender Fuenterrabía more easily.

This military conflict has been described and analysed from a historical point of view in some publications because it 1638 was an important milestone in the history of Fuenterrabía, but most of the times in a generalist way. Even today, the local festivity refers to their military success against the French in this episode that lasted sixty nine days. However, there is no profound analysis of this siege from a heritage point of view [8] [9].

There exist two contemporary chronicles [7] [10] that describe some details of the siege meticulously, and other later document compilations [11] [12] [13] that try to recall almost every important fact of the warfare process. But due to the complexity of the narration it is difficult to understand, even if you know the city and its surroundings. So it appeared the need to come up with a method that allowed to synthesize and compare the facts, understanding all the information with a glance. The method involves organizing the information extracted from the texts obtained after tracing bibliography in simplified sections depending on the specific information selected, also divided in besieged and besiegers. Once organized and displayed in a table, it became easier to graph the process. In these diagrams, the selected information was drawn over a current orthophotography of the city walls hypothesizing on the exact location, traces and shapes of the fortification works.

After a daily simplified definition of the siege process, where each day has a datasheet, a summary of every different sections taken into account is done. The French offensive was divided into the mines excavated, the artillery offensive and the consequences on the city walls. The besieged counteroffensive was defined by the constructions built in order to repair, improve the defences of the city or reduce the effect of the enemy's offensive.

FRENCH OFFENSIVE

Location and movements of the French troops can be determined through hypothesis supported by the text extracts and the theoretical knowledge of the time captured in artillery treatises [14]. Therefore, the enemy approached the city surrounding it and standing at strategic places where they were protected.

Mines offensive

The French began building approach trenches from almost the beginning of the site. From the fifth day of the siege the construction of new trenches against the bulwark of Reyna began, which also advanced to the stronghold of Leyva. More and more branches tried to approach by several points to the moat and the walls.

Once arrived to the counterscarp, they could continue and cross the moat with a covered trench or an underground gallery. Mines excavation took time because of the laboriousness involved in carrying out the work while trying to be safe from the besieged offensive, who sought to delay them. Due to these circumstances, the attacker did not get results from these works until the site was advanced.

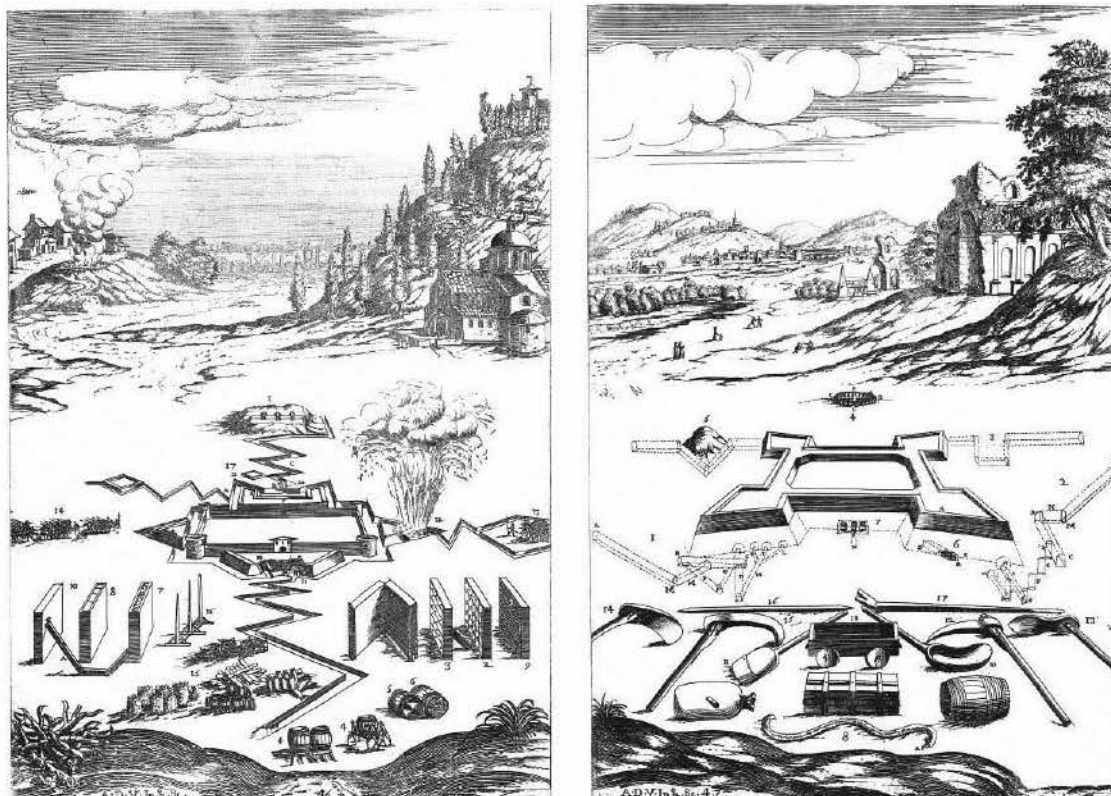


Fig. 5. Ways to approach the fortification through trenches on the left and through mines on the right. Planches 46 and 47 from the treatise by Antoine de Ville [14].



Fig. 6. Trenches and mines built by the French during the 69 days of the siege overlaid with a 2012 photograph by the municipality of Fuenterrabía. Own production.

Focusing on the success of these, we can determine that only four mines exploded controllably: two on the bastion of the Magdalene and the other two on the bastion of the Queen. From these, only the explosion of the 51st day of the siege on the bastion of the Magdalene opened a breach, but it was not sufficient so the attackers could enter, and other one breached the bastion of the Queen on the 67th day of the siege. French did not entered because the Spanish relief troops where already on the site [10].

The French strategy was clear: insisting on a single area of the wall to get enough result to attempt an entrance. But it was hard to achieve this goal only mining. Sometimes due to nature elements, other times due to the besieged actions and exceptionally due to unfortunate accidents. But the indisputable fact is that in this type of fortification is the most effective method. A well-made mine and exploding at the calculated time and location caused irreparable damage to the wall, either breaching or creating significant damage to facilitate access, as happened for example when the ruins filled the moat on the 40th day [7].

Artillery offensive

Meanwhile, as an attempt to breach the walls, the French continued beating the walls with all the artillery batteries placed mainly at seven points around the fortification, regardless of the forts on the Jaizquibel Mount [10]. Each one targeted a part of the fortification intending to ruin it. Six of them were located in the Spanish part: there were two batteries located on the banks of the river, at the north of the fortification against the bastion of the Magdalene; another one next to the Basilica of St. Mary Magdalene, also in front of the same bastion but located further from the shore to the west; a couple of batteries facing directly the bastion of Leyva and the Queen respectively; and a final battery in the hill of the Grace, just above the shrine of Our Lady of Grace [13]. The seventh battery is located on the French shore, on a sandbank known as Ondarraizu opposite the bastion of the Magdalene, as shown in figure 7.

The French effort focused on beating the west part of the city (bastions from north so south in this side: Magdalene, Leyva and the Queen). The topography of the area not only allowed the French to be protected, but also to place their artillery in dominating areas taking advantage of the higher points. Being aware of this weakness, the city walls were especially fortified on this orientation. This reinforcement can be seen in the evolution of the fortifications until 1638, where military engineers noticed this need due to the surroundings of Fuenterrabía. The other orientation was self-protected by the river and marshland that restricted the enemy's offensive.

However, this front still was the easiest to attack. The French battered during the first half of the siege process the defenses of Leyva and Magdalena. It is noteworthy that the most intense attacks occurred between days 40 and 45, from all batteries to the Leyva bastion, and showed the French interest to breach the walls after almost month and a half of siege with no result.

As a direct effect of the attacks, on the 12th day the houses located over the city walls cordone were ruined [7]. The 30th day the cannon located in the wall of the gabions between the bulwark and Magdalena de Leyva was disabled. From day 40th, the bastion of Leyva was first ruined partially, finally falling apart after one side was breached. Leyva was the most exposed bastion to artillery attack since both sides could be reached from almost any battery located on Mount Jaizquibel. The bastion of the Queen was a little less accessible to be attacked in this way, because though one side was sensitive to

batteries attack the other could only be reached by the guns located on the hill of Grace. Something similar happened with the bastion of the Magdalene, its side facing the sea and could only be reached by artillery fired from the French bank of the Bidasoa River.



Fig. 7. Artillery offensive by the French during the 69 days of the siege overlaid with a 2012 aerial photography owned by the municipality of Fuenterrabía. Own production.

Consequences in the fortification

The truth is that the combination of all the attacks, including artillery and mines, was what produced more destructive effect. In the end, each one had the immediate effect of reducing the strength of the walls, but any one of them could exceed the resistance limit ruining totally or partially the walls. The most significant damage occurred in all the elements oriented towards the west, all those parts of the fortress among the bastion of the Queen and the bastion of the Magdalene (figure 8).

Analysing as its elements independently, the stronghold of the Magdalena suffered damage in three different periods of the second half of the siege. The first attempt to breach the wall was by breaking different parts, achieving to open a breach. In the third period they focused on breaching the walls by the explosion of a mine. There were many attempts but never achieved enough gap to enter. Regarding the bastion of Leyva, two periods were developed principally quite similar to the mentioned. There was a partial demolition of the left side and the besieged levelled it. The second was a crumbling in parts until everything was demolished, opening up a gap on the right side. In the bastion of the Queen the damage occurred in a more continuous manner at the end of the period of siege. French sought to demolish the bastion by several subsequent days chipping on several points, but the most destructive effect occurred with the mines explosion. Although the opened a gap, they continued building mines.



Fig. 8. Damages produced during the 69 days of the siege overlaid with a 2012 aerial photography owned by the municipality of Fuenterrabía. Own production.

The walls between these three bastions were minor target of the attacks. They tried to broke them in several places, even mined them, but from inside they quickly counterattacked by throwing all kinds of items from the wall or building countermines to quickly cut the mines.

SPANISH COUNTEROFFENSIVE AND ITS EFFECT ON FORTIFICATION

Slightly could be done by the besieged within repairs and reinforcements of damaged walls. They increased with gabions those parts who lost the cordone. The works of the insiders to resist longer had more to do with reducing the impact of the mines and evade the French entry than to repair damaged walls.

The besieged also had several pieces of artillery that counterattacked the French, slowing their galleries and trenches. However, the artillery capability inside the stronghold was considerably lower. Therefore, efforts focused on building works to delay the entry of the French, either reducing the impact of its mines in case of explosion or obstructing the access if they breached the wall.

In the first case, the only way to counteract the mines was to find them before the explosion and open ducts to the outside that reduced their effect. For this purpose, digging works known as countermines were built. They required the presence of a military expert with experience in this field to explain the besieged how and where to do these underground galleries through which they tried to approach the enemy's mines. If the French were aware that they had been located, they tried to fire the mine as soon as possible to produce the greatest possible damage.



Fig. 9. Spanish works during the 69 days of the siege overlaid with a 2012 aerial photography owned by the municipality of Fuenterrabía. Own production.

Numerous works were built in the three bastions (figure 9) and two walls located in between. The countermines made in the bastion of the Magdalene were excavated especially near the left angle of the bastion (facing west). Of these, two managed to finally reach the mines and dismantle them. However, in the stronghold of the Queen just one countermine was built, because there was no need due to the trench excavated that created a gap behind the bricked gates and would vent the mine in case it exploded [7]. The rest of countermines were built in the wall of St. Nicholas, near the bastion of the Queen. As they failed to find the mines, they built a series of works in the same area but inside the wall to protect themselves if any outbreak was achieved at that point.

In the second case, there were several ways to obstruct the enemy once breached the wall. Most of them were building up any element to protect the defender in case the enemy entered, whether a trench, a parapet or a safe back. In some cases, a stockade or embankment. In this siege, the first mechanism was to brick the portals except the one looking at Hendaye [7], because they needed a back gate to exit and attack the besieging troops. Worth noting the large number of works made in the bastion of the Queen. During the last ten days of the site they built: a retreat, two stockades and an embankment that first day; a trench and a redoubt. Other works were done on the bastion of the Magdalene, where a safe back against the wall that enclosed the bastion was built. They also did a cutting and embankment built with the soil extracted while digging the countermine. Apart from this, a safe back on the bastion of Leyva and the ammunition store, as they were receiving heavy fire from all the batteries.

The usefulness of countermines became obvious when those mines which were given fire generated minor damages on the fortification. However, it is more difficult to assess

the utility of other works, since French troops never did a deep incursion into the stronghold to demonstrate the patent advantage of these protective elements. After the sixty nine days of siege, the rescue troops arrived and the enemy withdrew [12] [13].



Fig. 10. Current view of the fortified town of Fuenterrabía obtained from Bing Maps.

CONCLUSIONS

Know how projects of bastioned fortifications were made, what damages suffered in wars throughout history and what campaign fortifications were built allow us to recognize their relevancy leading to the understanding and treatment of military heritage conservation.

Unlike other sieges where they attacked on several fronts, in the siege of Fuenterrabía of 1638 the fortification was attacked by only two fronts due to the counter-slope favouring the attacker. The location of the enemy at higher points than the stronghold, in contraindication of poliorcetic theories, reduced attacking distances from up to 500m to almost a half. The importance of the expertise of the military engineers of the time, both as attackers besieged, as evidenced throughout the mine and countermine trajectories. The besieged made few repair works because it was more useful to reinforce the weak points through which the enemy could enter.

From these direct conclusions are drawn others, such that although this siege followed all the maxims of how a stronghold should be attacked (e.g. attacking army 10 times superior in number, to breach the defences,...) nor was urgent for the French will open breach in the wall nor was there a rush to reach or to send relief troops to the stronghold to end the attempted takeover of the villa. This was because it was not an isolated incident and the attempted siege was part of a territorial war.

The prospective of this work is related with the application of this methodology in other war episodes, physical transformations of the walls or other strongholds in a systematic, brief and intelligible way. It facilitates the communication and dissemination of results, not only in literature but also in museums, exhibitions, visitor centers and other means of dissemination.

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