



## **Tiburzio Spannocchi's project for the fortifications of Fuenterrabía in 1580**

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### **Abstract**

Fuenterrabía (Hondarribia) is a town located on the Franco-Spanish border. Between the 16th and 19th centuries it was considered to be one of the most outstanding strongholds in the Basque Country due to its strategic position. The bastion system of fortification was extremely prevalent in this stronghold. It was one of the first Spanish towns to adopt the incipient Renaissance designs of the bastion. The military engineers subsequently carried out continuous fortification projects that enabled the structure to withstand the advances being made in artillery and siege tactics. After the construction of the citadel of Pamplona had begun in 1571, following the design of the prestigious military engineer, Jacobo Palear Fratín and being revised by Viceroy Vespasiano Gonzaga, the aforementioned engineer undertook an ambitious project commissioned by Felipe II to modernise the fortifications of Fuenterrabía. Neither the plans nor the report of this project have been conserved, but in the year 2000, César Fernández Antuña published the report written by Spannocchi on the state of the fortifications of Fuenterrabía when he arrived to the Spanish peninsula, discovered in the Archivo Histórico Provincial de Zaragoza. This document conducts an in-depth analysis of Spannocchi's project and how it was related to Fratín's previous project. It concludes that this project encountered problems in updating the new bastions at the end of the 16th century, and identifies the factors which prevented the stronghold from being extended as was the case in Pamplona after Fratín's project.

*Keywords: fortifications, military engineers, Tiburzio Spannocchi, Jacobo Palear Fratín, Fuenterrabía, Hondarribia.*



## 1 Introduction

During the Middle Ages, offensive enclosures were more effective than offensive weapons. However, the development of artillery in the second half of the 15th century brought about significant changes in the concept, design and technical layout of military fortifications in order to ensure that defence forces would be capable of enduring a protracted siege. Taking the French example as a basis, Italy played a fundamental role in transforming the bastion front in the final years of the 15th century.

Renaissance military architects began to transform the ancient medieval tower so that it could house artillery. According to Tzonis and Lefaivre [1], bastion was developed, applying triangular polygonal forms in order to counteract technical developments in artillery, and Rocolle [2] indicates that this was the result of gradual developments over many years.

Spanish bastion design developed in 15th and 16th centuries due to the permanent state of war during the Middle Ages, and the influence of classical cultures. In most cases existing fortresses were adapted to the new defence requirements. However, during the 16th century, the Crown carried out the enormous task of fortifying and maintaining its European and American dominions and was unable to renovate the fortifications within the peninsula in line with the modern defences needed, as said by Quatrefages [3]. Initially the only sensitive areas of defence were the Pyrenees and subsequently the coasts, particularly the Mediterranean, as the Turkish danger was exacerbated during the years 1520 to 1530.

## 2 Fuenterrabía fortifications

Fuenterrabía's situation, lying at the mouth of the river Bidasoa and close to Irun and Hendaye, had a considerable effect on the town's social and economic development. As with other towns of Western Europe in the Early Middle Ages, the inhabitants of Fuenterrabía raised a fence or wall to defend and demarcate the perimeter of the settlement. Despite a lack of knowledge of its exact outline, it would have been dominated from the interior by a defensive tower. However, there was an increase in its defensive constructions following the annexation of Navarre by Castille due to its location on the border with France.

The Catholic Monarchs ordered the construction of a castle to replace the defensive tower, which according to Astiazarain [4], Carlos V extended and restored. The medieval walls underwent several changes in order to counteract the effect of new guns and undermining.

### 2.1 Bastioning of medieval fortifications

Work was begun on a bastion in Fuenterrabía in 1496, a year before Master Ramiro López's paradigmatic project for Salsas, however the real transformation took place later and the manner in which this was implemented differed from other fortifications. Due to the conditioning factors of the land, it was decided to



build a modern defensive enceinte surrounding the existing medieval perimeter. As may be seen in the first graphic document of the Fuenterrabía fortifications (Figure 1) the obsolete medieval towers were left unchanged. The first bastions began to be built from the second decade of the 16th century, lowering the line of the curtain walls, towers and battlements in order to contain large earth embankments.

When the French troops captured Fuenterrabía in 1521, a medieval walled perimeter and another enceinte with artillery capacity coexisted alongside each other [5]. According to Astiazarán [4], the Imperial and Leyva wall towers were developed following this assault. The other bastions built were smaller than these two and were heart shaped: that of the Magdalena replaced a prominent semi-circular one, and that of the Queen embraced a circular tower from the medieval wall and another pentagonal tower in the new wall.

In 1539 Carlos V visited the fortifications at Fuenterrabía when the Castilian troops managed to regain the town in 1524. According to Portu [6] and Porras [7], he sent Captain Luís Pizaño to supervise the repair works of the damages inflicted. The main fortifications built were the bastion of San Nicolás (1524–1545) and la Reina (1538–1556), thus partially modernising the fortified perimeter of the enceinte.

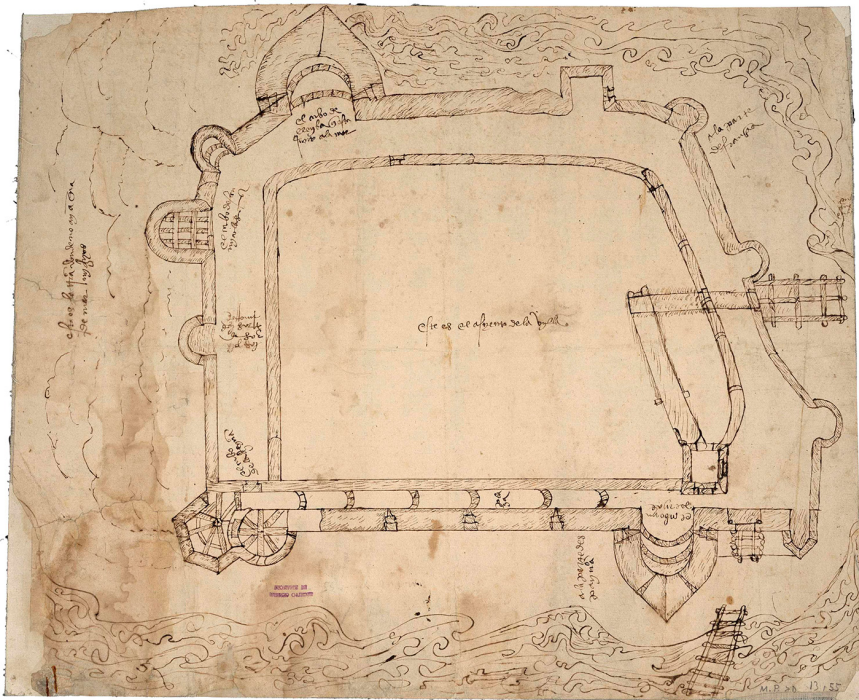


Figure 1: The fortifications of Fuenterrabía circa 1535, Archivo General de Simancas, M. P. and D. XIII-55.

## 2.2 The Fratín project

In 1571, Philip II ordered the military engineer Jacobo Palear Fratín [8] to design a pentagonal citadel for Pamplona in the style of that built in Antwerp [9], which led to a reduction in Fuenterrabía's strategic importance. When part of the old city wall fell away in May the following year, the king ordered Fratín to visit the town fortifications. After an initial reconnaissance of the enceinte, Fratín decided that it favoured the enemy, and although this is not documented, it is known that he drew up a modernisation project. Due to the urgency and the scant budget, he began construction of a new bastion with considerable artillery capacity. Situated in the east, it dominated the mouth of the River Bidasoa, leaving defence of the west to the Reina and San Nicolás bastions – although these were smaller.



Figure 2: The author's hypothesis of the Fratín project.

The Fratín project consisted of a somewhat irregular fortification outline (Figure 2), adapting to geographic conditioning factors [10] but approaching the regular fortification model as far as possible. According to Cobos this principle laid the foundations for the excellence of the Spanish monarchy's fortifications on all its frontiers [11]. The construction work on the San Felipe bastion was insufficient given the strategic importance of Fuenterrabía, and aware of this at Court they ordered a new fortified enceinte in line with Fratín's proposal [12].

## 3 The Spannocchi project

### 3.1 Engineer Spannocchi's report

Cámara [13] indicates an alarming lack of qualified engineers in the Iberian peninsula during those years. The governor of Milan and the viceroys of Naples and Sicily were ordered to dispatch their country's best and, as a result, the



famous engineer Tiburzio Spannocchi [13] arrived in Spain. He visited Fuenterrabía in order to examine its fortifications as soon as he set foot on Spanish soil and as Fratin was in charge of supervision and inspection of the Mediterranean fortifications at that time [8], the king commissioned Spannocchi to draft a new project, which would review past proposals as mentioned by Maggiorotti [14].



Figure 3: Spannocchi project for Fuenterrabía. Archivo Histórico Provincial de Zaragoza, Archivo Ducal de Híjar, Fondo Idiáquez, Sala IV, leg. 199.



Two copies have been preserved of Spannocchi's project for Fuenterrabía. One is kept in the Archivo Histórico Provincial de Zaragoza (hereinafter AHPZ) [15], including a precise plan, two vertical sections of the western front and an accompanying report in Italian. The other copy, which lacks any graphic documentation but contains a more extensive report is kept in the Archivo General de Simancas (hereinafter AGS) [16]. These documents were published by Fernández Antuña in 2000 [17], including transcriptions of the reports. From some of the documents it is clear that the essential aspects of his site analysis coincided with those of Fratín.

Spannocchi's report provides the best preserved technical description of the state of the Fuenterrabía fortifications in 1580. It gives an idea of the obsolescence of its bastions, earthworks, bastioned fronts, and indicates the absence of essential elements: the moat border and the covered way in the western part and the moat in the eastern part towards France – which, as it was affected by the tides, could provide easy access for the enemy at certain times.

The bastions constructed following recovery of the site by the Castilian troops in 1524, completed in 1556, were obsolete. They had thin parapets throughout the enceinte and lacked interior embankments [11]. The only bastion with sufficient room for the earthworks was that of San Felipe, initiated by Fratín, but unfinished and without a moat around the whole perimeter, it was more prejudicial than beneficial for defence of the fortification. The foundations had used up most of the resources as they were laid on sandy soil, and subject to the ebbing of the tides and the effects of the river estuary. Furthermore, Fratín designed an excessively angular bastion and, for geometric reasons, the width of the gulley was insufficient. This defect weakened its resistance and made it difficult for transit of artillery pieces and garrison.

Spannocchi considered it unlikely that the enemy would manage to get close with its artillery from the north by sea, or by the river or the marshland areas. This line of attack could be avoided with a small garrison constructing a defensive tower in the area of San Telmo, on the point and dominating the sea.

The most likely attacks would come from land, from the west, where two hills at a height of approximately 40 metres situated just 300 metres from the fort were clearly aids from which the artillery could cause considerable damage. The little valleys between the hills and the slopes of Mount Jaizkibel would safeguard the attackers to some extent. The enemy could come from Hendaye and, by going round southwards having crossed the river, they could position themselves on this elevation looking down on the fortress from a position of safety.

### 3.2 Proposals

In his general project, Spannocchi described two quite distinct scenarios. In the global context of defending the western French-Spanish border, the fortresses of Fuenterrabía, San Sebastián, Pasajes and Pamplona formed a territorial defence system. In order to be really effective with the minimum number of defenders it was necessary to rationalise the number of forts and their magnitude or scale, taking into account the garrison required. Considering the efforts carried out in

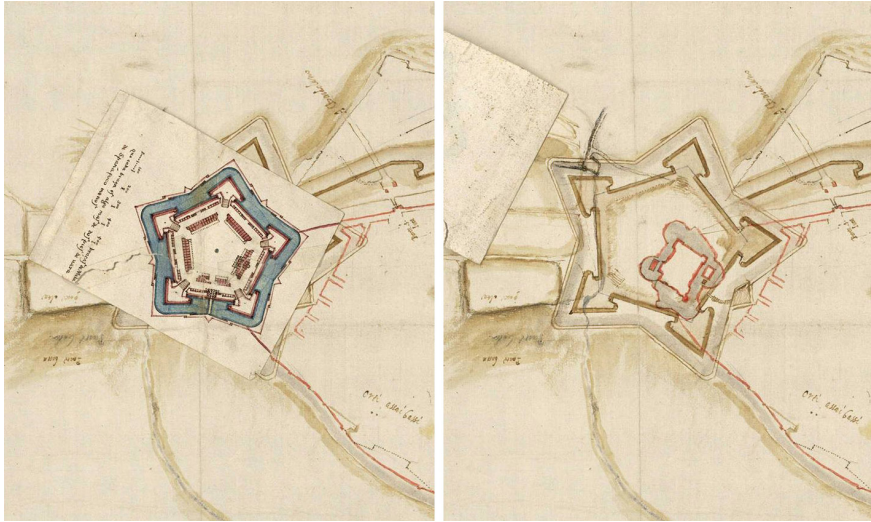


Figure 4: Spannocchi's project for the citadel of Cremona, 1595, AGS. M. P. and D. IX-51.

Pamplona with the first pentagonal citadel, one scenario meant continuing with the existing fortifications in Fuenterrabía.

It was essential to modernise the bastions as in their current state they were unable to house the artillery, apart from completing the ditch, covered way and contrascarp throughout its perimeter. Spannocchi chose to extend the la Reina and San Nicolás bastions, as once the San Felipe bastion was operating and with the natural defence of the fort to the north and east, the western front was a priority. Subsequently it was possible to complete the works of the Santiago initiated by Gonzaga according to the Fratin project, and a final bastion was to be built beside the sea. Due to the scant financial resources available, instead of dismantling the existing masonry and reusing the material, they built new walls with their counterforts, to be filled with compressed and reinforced earth embankments the space between the two stoneworks. In addition, the parapets were extended, further loopholes were created and the ditches completed. In order to ensure effective defence, he proposed resolving the irregularities of the terrain, lowering the height of the hill by six or eight yards in addition to cutting down the existing trees a distance of 300 Castilian yards – around 250 metres.

The second scenario proposed would have meant a radical transformation both in the fortifications of Fuenterrabía and in the territorial settlement of the population at the Bidasoa mouth. Spannocchi drafted this option with the same premise that Fratin had suggested some years earlier, extending the area to the west to include the Cerezo hill in its interior.

The enceinte was extended from the bastion of la Reina to that of la Magdalena with similar bastioned fronts to those built for the existing perimeter. The length of these two western fronts increased from 400 Castilian yards – 334 metres – to 1,000 Castilian yards – 835 metres. The most effective method was



Figure 5: The authors' hypothesis on Spannocchi's proposals to extend the fortress.

to build the new enceinte with four new bastions, which was sufficiently extensive to counteract the dominance of the Cerezo hill. However, Spannocchi indicated that another version with three new bastions which would reduce the cost of the works and the garrison requirements. Although the plan of the proposed extensions has not survived, bearing in mind the dimensions of the bastioned fronts used at the time, two hypotheses have been put forward by the authors. Based on today's elevations of the Zimizarga neighbourhood, which in former times was located on the Cerezo hill, Figure 5 shows the extension hypotheses superimposed on the current city and compared to the outline of the plan preserved.

The extension caused many difficulties in addition to financial problems. Surrounding the Cerezo hill alone would mean that the fortifications would be too close to the Santa Engracia hill, but the solution proposed for the Cerezo would not be appropriate for Santa Engracia. As it was further away and at the other side of the backwater created by the Bidasoa, the cost would have been excessive not to mention the technical problems arising from the river. In both cases, extending the fortified enceinte would mean that the walls would be too close to the slopes of the Jaizkibel, and thus within range of enemy fire.

The costs of the works included at the end of the report provide details of the three above-mentioned options. The first scenario, without proposing any extension to the enceinte was budgeted in considerable detail with an estimate of 74,736 ducats (Table 1), whereas Fratin's similar proposal was valued at a total of 105,000 ducats – without counting any possible repairs needed. The difference of over 30,000 ducats was noticeable (Table 2).



Table 1: Summary of Spannocchi's improvements of the outline.

DESCRIPTION	TOTAL
La Reina bastion	14,490 ducats
San Nicolás bastion	11,828 ducats
La Magdalena bastion	11,546 ducats
San Felipe bastion	11,372 ducats
Revellín bastion	9,120 ducats
Casemates and dyke	16,380 ducats
<b>TOTAL</b>	<b>74,736 ducats</b>

Table 2: Comparison between Fratín and Spannocchi's outline proposals.

DESCRIPTION	FRATÍN – 1574	SPANNOCCHI – 1580
Mountain part	60,000 ducats	37,864 ducats
Part facing the sea (2)	25,000 ducats	20,492 ducats
Ditches and embankments	20,000 ducats	16,380 ducats
<b>TOTAL</b>	<b>105,000 ducats</b>	<b>74,736 ducats</b>

Taking the cost calculated for the new la Reina bastion as a basic estimate for a new one – 14,490 ducats according to Table 1 – an approach was made of the cost of these extensions. The cost of building four new bastions replacing the two western fronts would amount to 277,656 ducats (Table 3) and 227,496 ducats building only three new bastions (Table 4).

Table 3: Proposal for extension of the enceinte with 4 bastions.

DESCRIPTION	TOTAL
<b>Bastions (4)</b> 14,490, proportion of la Reina bastion	57,960 ducats
<b>Casemates (8)</b> 2 per bastion, 4,490 per bastion	17,960 ducats
<b>Ditch and covered way</b> 6,000 ducats for each distance	24,000 ducats
<b>Curtain walls (4)</b> 12,000 ducats for each curtain wall between 2 bastions	48,000 ducats
<b>Curtain wall replacing the bastion of San Nicolás</b>	74,736 ducats
<b>Expropriation of vineyards and orchards</b>	15,000 ducats
<b>Earth movements</b>	40,000 ducats
<b>TOTAL</b>	<b>277,656 ducats</b>

Table 4: Proposal for extending the enceinte with 3 bastions.

DESCRIPTION	TOTAL
<b>Bastions (3)</b> 14,490, proportion of the la Reina bastion	43,380 ducats
<b>Casemates (6)</b> 2 per bastion, 4,490 per bastion	13,380 ducats
<b>Ditch and covered way</b> 6,000 ducats for each distance	18,000 ducats
<b>Curtain walls (3)</b> 12,000 ducats each curtain wall between 2 bastions	36,000 ducats
<b>Surround considered superfluous</b>	74,736 ducats
<b>Expropriation of vineyards and orchards</b>	12,000 ducats
<b>Earth movements</b>	30,000 ducats
<b>TOTAL</b>	<b>227,496 ducats</b>



However, Spannocchi indicated in all honesty that he was not entirely sure whether or not this solution would be harmful or beneficial from a defence perspective. The costs of execution and maintenance of the garrison in these proposals were excessive and it did not seem as if this option would be capable of avoiding enemy attack from the west.

Table 5: Comparison of proposals.

DESCRIPTION	SPANNOCCHI 1 outline improvement	SPANNOCCHI 2 extension (3 bastions)	SPANNOCCHI 3 extension (4 bastions)
Mountain part	37,864 ducats	198,656 ducats	167,496 ducats
Part facing the sea	20,492 ducats	—	—
Ditches and embankments	16,380 ducats	79,000 ducats	60,000 ducats
<b>TOTAL</b>	74,736 ducats	277,656 ducats	227,496 ducats

#### 4 Fortifications following the Spannocchi project

Work on the San Felipe bastion was essential to maintain the defence until the assisting army arrived, and it continued in line with Fratin’s plans. This was clear from the siege of 1638. Spannocchi returned to Fuenterrabía in 1597 [18] and in 1603, having been appointed Senior Engineer of the Kingdoms of Spain, and he drafted a report on the status of the fortifications [19] which served, following his death, in a new improvement planned in 1609 under the aegis of the engineer Jerónimo de Soto.

Although during Philip III’s reign no notable works were constructed [20], following the siege of 1638 some external works were carried out such as a revelin at the San Nicolás gate and a tenaille in the northwestern part. Throughout the 17th century improvements were made to the fortress. Although they never managed to extend the Santa María and San Nicolás bastions as Spanocchi had proposed, the Santiago bastion was built and another bastion in front of the Magdalena tower thus strengthening the French front.

#### 5 Conclusions

The Fuenterrabía fortifications were the subject of numerous projects carried out by military engineers throughout the 16th century. They resulted from the technical advances made in the search for the perfect defence machinery, namely the bastioned front with protected casemates in order to defend the moat.

On his arrival in 1580, Spannocchi revised Fratin’s proposals from 1572. Coinciding to a considerable extent with the latter’s analysis, he once again considered the possibility of extending the enceinte to the west. This solution was to provide three or four new bastions, which presupposed land restructuring and involved enormous economic costs and garrison provisions. Finally, this option was rejected as unsuitable in addition to the technical problems involved due to the proximity of the slopes of Jaizkibel and the Santa Engracia hill, and

another scenario was established in which only the existing bastioned enceinte was adapted. Therefore he detailed his proposals for reinforcing the existing perimeter walls with great precision, extending the la Reina and Santa Nicolás bastions – so that they could contain more artillery weapons – resolving in a more effective manner the flank of the ditch from the casemates. In addition to correcting Fratin's design for the San Felipe bastion, he completed his project with two further bastions facing towards France. Subsequently named the bastions of la Magdalena and Santiago, the latter had been begun by Gonzaga years before, and was still under construction on the ground. Despite the difficulties of building, due to the tides and the river estuary, he believed that their construction was a necessity.

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