

FORTIFIED PLACES

in the Bay of Cadiz

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The defensive front land of Cadiz and Benedetto da Ravenna's projects in a Portuguese context

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Fig 1. Fortress of Ceuta.
Bastioned front land, built in
the 1540's. Photograph from
the author.

Throughout the 16th century, the development of war techniques and the big increase in the offensive power of artillery caused a complete revolution in the needs that different places and cities had in terms of defence. In this period, military architecture was responsible for the development of new concepts in terms of morphology, construction and architectonic language. The emergence of robust military structures, with new and surprising forms applied in the defence of the territory, definitively changed the landscape and the image of cities and deeply marked the universe of the architectonic culture of the time.

The efficient defence system of the bay of Cadiz, which was built mainly after the plunder of 1596 and based on a group of bastioned fortifications operating together, made the city one of the best protected in Spain. This system made it possible for the city to achieve a great importance in certain moments in the modern history of the country. Taking into account the features of the city's territory, the defensive land front of *Puertas de Tierra*, located in the access to the continent, was a key element of the defence system. Assuring the defence of the link to land and including a deep moat, which ensured a cut between the north and south coasts, the fortified front isolated the city.

This type of defence, based on the definition of a cut in the territory that isolated a piece of land, had been prevalent for a long time in coastal areas with specific geographical features.

However, the introduction of the bastioned system in the 16th century opened new possibilities for this type of defence. The modernization of large defence perimeters with the introduction of the fortified bastion system implied huge costs, which were often unviable. In the case of seacoast fortifications, the defence needs, at that moment, were mainly related to the reinforcement of land fronts defences, as a response to the attack of the field artillery. In fact, the great potential of the attack of artillery was attained when it was settled on land, imposing a siege war. Even when the threat of invasion came from the sea, it was crucial to disembark and install artillery on land for the attack on land fronts. Regarding this, certain coastal areas saw their strategic importance reinforced, which is the case of Cadiz, Gibraltar or Ceuta, taking into account the natural conditions they possessed, which were propitious for the installation of a defence system in relation to the continent.

Among the first cases that applied this type of defence with the introduction of pentagonal bastions, special distinction goes to the seacoast fortifications built by the Portuguese in different continents from the 1540s. In fact, this type of defence was particularly suitable to the specific needs of the Portuguese, particularly in the group of territories they possessed on the African and Asian coastlines, linked by sea, in order to control the main sea routes. From the beginning, the choice of location to install each fortress depended mainly on the geographic situation, searching for good natural defence conditions in relation to the continent and good access from the sea. In the first decades of the 16th century, in fortifications like Canamor and Diu (fig.2-3), in India, or Ormuz, in Iran, located in places with peculiar geographical features, we can recognize the construction of this type of defence, with the isolation of a part of the land, the opening of a moat, and the construction of a strong defensive front facing the land, yet with cylindrical towers. Designed by those who controlled the war at sea and aimed to ensure permanent presence in hostile territory, these are fortifications from the sea, facing the land and in which the power of solid defensive fronts is concentrated against the continent, while the defence of the perimeter by the sea is ensured through simplified structures.

It was through Benedetto da Ravenna¹ that this type of defence was applied for the first time in Portuguese military

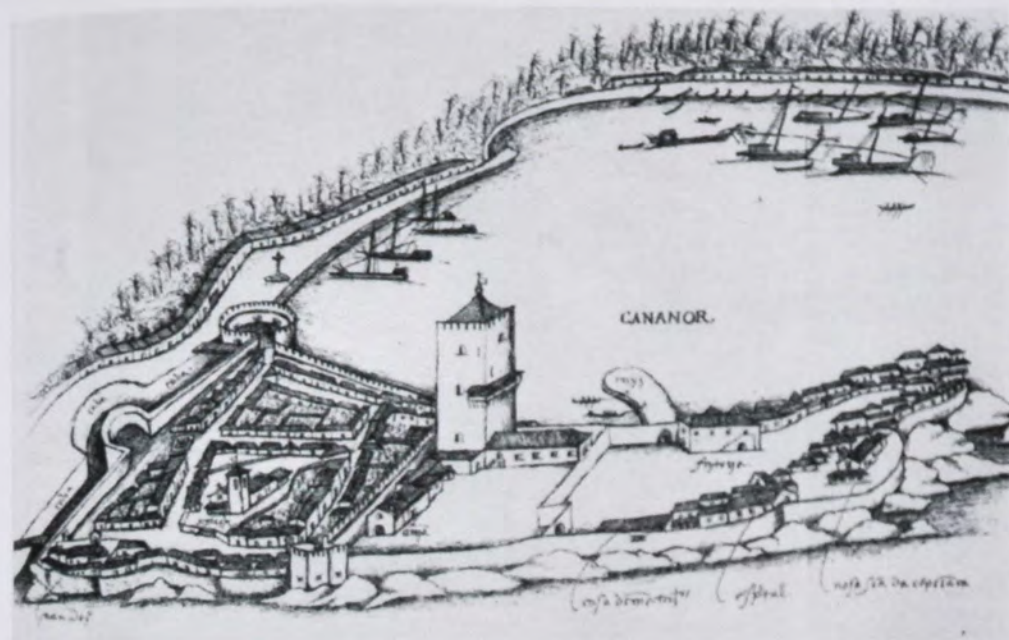


Fig 2. Fortress of Canamor, in India. Reproduction of Gaspar Correia's illustration from 1545, in CORREIA, Gaspar, *Lendas da Índia*, Porto, Lello e Irmão Editores, 1975.



Fig 3. Fortress of Diu, in India. Reproduction of Gaspar Correia's illustration from 1545, in CORREIA, Gaspar, *Lendas da Índia*, Porto, Lello e Irmão Editores, 1975.



Fig 4. Fortress of Ceuta.
Bastioned front land.
Drawing from unknown
autor, around 1694, in
Biblioteca Nacional de
Lisboa, DA 7ª, fl.58,
CORREA, João Thomas –
Livro de Várias Plantas deste
Reino e de Castela. Lisboa:
Livreria da Casa do Espírito
Santo de Lisboa, [s.d.]



Fig 5. Fortress of Ceuta.
Drawing from the author.

Fig 6. Fortress of Diu.
Drawing from the author.

constructions, with the introduction of modern bastioned fronts that concentrated the defensive power against land. In the brief period in which he was at the service of the King of Portugal, in 1541, Benedetto da Ravenna was responsible for the projects of the Ceuta and Mazagão fortifications, designed and built with the cooperation of some important Portuguese architects, namely Miguel de Arruda, in Ceuta and João de Castilho, among others, in Mazagão². Both projects explored the architectonic possibilities in an intuitive and intense way, without following well defined rules, which is normal in this stage of the evolution of the bastioned model.

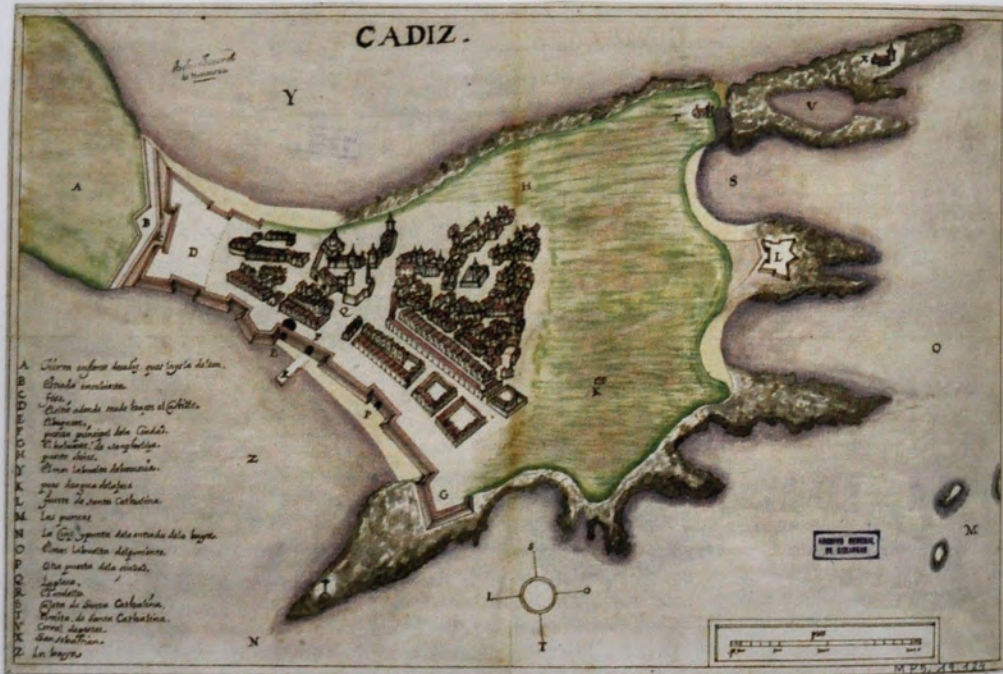
In Ceuta, in a geographical setting with some similarities to the one in Cadiz, the military engineer designs a powerful bastioned front facing the continent, isolating the peninsula through a deep moat and sea canal, which is still in operation nowadays (fig.1, 4, 5). Setting a methodical defense, all the construction is based on a strict geometry. Given the need for a massive intervention, the Ceuta fortress project follows an attentive examination of the physical and geographical features of the territory, considering the reuse and transformation of the pre-existing defence structures. With a constructive procedure that was common in many of the modernization works, the existing constructions were reused as the material of the new work³. In the end, the result was a homogeneous and modern construction, without any remains of the medieval structures that were integrated into the construction, forming a defence system of innovative characteristics with robust fortified fronts and angled bastions.

The projects of Benedetto da Ravenna for the fortresses of Ceuta and Mazagão were mainly carried out according to the orders of the king, who was particularly interested in these first experiences with the introduction of the fortified bastion system in his lands⁴. In fact, these fortresses were essential references in the development of new military structures in Portuguese territories, still in the 1540's, with the Diu case (fig.6-7), on the Indian coast, and in the following decades, with cases like the Island of Mozambique and Mombasa, in Eastern Africa; Bahrain and Ormus, in the Persian Gulf; Goa and Daman, in India; Salvador da Bahia, in Brazil; Tangier, in Morocco; Ponta Delgada and Funchal, on the Atlantic Islands; or Julião da Barra, near Lisbon. Miguel de Arruda, who followed Benedetto da Ravenna closely during the execution of the two fortress



Fig 7. Fortress of Diu. Bastioned front land, built in the 1540's. Photograph from the author.

Fig 8. The defensive system of Cadiz in 1609, including the bastioned land front, yet without the exterior works. "Planta de la ciudad de Cádiz". Archivo General de Simancas.



projects, had a decisive role in the consolidation process of the fortified bastion system within the Portuguese context. He left a body of work, in different continents, with innovative features and marked by a great architectonic accuracy. With regard to Benedetto da Ravenna, although the projects for the fortresses of Mazagão and Ceuta corresponded to a short episode in his intense professional life, paradoxically these are his most significant works, from among those that still exist today.

Around 1534, the modernization of the Cadiz defence system, with the introduction of the bastioned model, starts being regarded by Benedetto da Ravenna as responsible for the reinforcement of defence systems in several places in the south of Spain, like Gibraltar, Malaga and Cartagena. From 1538, Benedetto oversees the modernization works of the Cadiz defences, which include the execution of works on the medieval city wall of *Puertas de Tierra*. For the military engineer, who was a serious defender of the fortified system, the importance of a bastioned land front in the defence system of the city was evident. Benedetto da Ravenna should have developed the first project of a bastioned land front for the city, probably with similarities to the one he carried out for the isthmus of Ceuta not long after, taking into account the parallelism between the geographical features of the two locations. However, the bastioned land front of Cadiz was not built in that period, having been delayed successively, as happened later under the direction of Juan Baptista Calvi. Despite having reinforced the old wall and built two bastions close to the gate, the fortification was not implemented as an effective bastioned front that ensured a systematic and methodical defense. In fact, the principles that Benedetto da Ravenna sets in the design of Ceuta's land front in 1541 only will be applied in the defensive land front of Cadiz built more than 50 years later. During this time the large investment made in the modernization works of the bay's defence system did not include the huge territorial operation of building the bastioned land front.

Only after the English-Dutch plundering of the city in 1596 – the troops of which entered precisely through the land wall of *Puertas de Tierra* – was the bastioned front built, under the direction of Cristobal de Rojas. Integrating the existing built structures, the front was composed of enormous semi-bastions, linked through a central wall, which included the access gate to the city, with a moat from the South coast to the North coast.

Integrated into the bay's defence system and operating together with the other fortified structures, for a long time the land front imposed the limits of the city on the West side, restricting its growth decisively. Throughout the years, the set of defences was progressively reinforced with the introduction of new exterior works, which were successively more complex, with the aim of stopping the enemy from getting closer and reducing the impact of the enemy's artillery. In the 19th century, when it was necessary to reinforce the land defence again, the *Cortadura* fortress was built in the West, with the introduction of a new defensive front, still following a defensive system similar to the one defined in the 16th century.

When the land front of *Puertas de Tierra* lost its military function permanently, its presence was put into question, taking into account the way it restricted the link from the city to the land. In 1931 starts the demolition of a great part of the defence, including almost all of the moat and ravelins system and part of the bastions. The enormous war infrastructure, designed in accordance with the scale of the territory, lost its extensive system of exterior works and was reduced to a mutilated construction, subject to the needs of traffic circulation. As well as eliminating a great part of the overall construction, the interventions of the 20th century imposed significant alterations to the elements that were maintained, erasing many of the unique marks that are featured in the military structure – like those related to the architectonic surfaces that accumulated the signs of the passing of time – calling into question the authenticity of the whole set. As well as the historical value, the existing land front is part of the identity of Cadiz and its presence is fundamental in order to recognize the structure of the city and the evolving process of occupation. Today, new possibilities of valuing this military construction should be considered, namely with regard to the way it integrates into and defines the structure and life of the city, taking into consideration the reinforcement of the concept of land break, which corresponds to the main feature of its presence.

Fig. 9. The plundering of Cadiz in 1596, with the troops entering into the city through the land wall of Puerta de Tierra. Illustration: "an exact map of the town of limes, made by the commandment of the lords generals" in: CALDERÓN QUIJANO, José Antonio: *Las defensas del Golfo de Cádiz en la Edad Moderna*. Sevilla, Escuela de Estudios Hispano-americanos, 1976.



1. Benedetto da Ravenna was a prestigious military engineer, veteran in the Eastern Mediterranean campaigns, at the service of the Spanish crown, at least from 1511. He was a strong adherent to the fortified bastion system, with an ample knowledge of fortifications and important practical war experience. He participated in different military campaigns, like in Rhodes in 1522 and the invasion of Provence in 1524, namely in the sieges of Marseille and Toulon. Between 1530 and 1534 he examined and developed proposals for the fortifications of different squares on the Northern Spanish border, among which stand out Perpignan – where he would return later – Logrono, Pamplona and San Sebastian. From 1534 he visited and designed reinforcement works in different places in Northern Africa, like Oran and Mazarquivir, and in the South of Spain, Cadiz, Gibraltar, Malaga and Cartagena. In 1535 he participated in the Tunes expedition, an experience that caused him later to be made responsible for the La Goleta, Bona e Bugia defence. From 1538 he carried out a project and accompanied the defence works of Cadiz. From 1540 he accompanied the works of the Gibraltar fortifications, after the plunder of the city by Barbra Rocha, a task he was responsible for, when he was requested to visit Ceuta.

2. About this subject see: *Do Mar Contra Terra: Primeiras Fortificações Abaluartadas da Expansão Portuguesa* (Matos, 2012: pp.82-88)

3. *Un documento portugués de 1541 sobre las fortificaciones de Ceuta*, (Ricard,1947). As described by Benedetto da Ravenna, the old walls were used as limits for embankments; the rock from the demolitions was used in the construction of irregular rock masonry and the rubble from opening the moat and other demolitions was used to fill in the repairs.

4. *Do Mar Contra Terra: Primeiras Fortificações Abaluartadas da Expansão Portuguesa* (Matos, 2012: pp.158, 283)