
CAPTAIN NICK'S

# ΝΕΩΡΙΑ ΧΑΝΙΩΝ

Ιστορική τεκμηρίωση
στερέωση / αποκατάσταση
ένταξη νέων χρήσεων

**THE VENETIAN SHIPYARDS OF CHANIA**

Historical documentation
consolidation / restoration / reuse

**ΝΕΩΡΙΑ ΧΑΝΙΩΝ / THE VENETIAN SHIPYARDS OF CHANIA**

Έκδοση στο πλαίσιο της Προγραμματικής Σύμβασης Πολιτισμικής Ανάπτυξης
για την εκπόνηση του ερευνητικού προγράμματος με τίτλο:

ΕΡΓΑΣΙΕΣ ΓΙΑ ΤΗΝ ΙΣΤΟΡΙΚΗ ΚΑΙ ΤΕΧΝΟΛΟΓΙΚΗ ΤΕΚΜΗΡΙΩΣΗ
ΤΗΣ ΜΕΛΕΤΗΣ ΩΡΙΜΑΝΣΗΣ ΤΩΝ ΕΡΓΩΝ ΑΠΟΚΑΤΑΣΤΑΣΗΣ -
ΑΠΟΔΟΣΗΣ ΧΡΗΣΕΩΝ - ΑΝΑΔΕΙΞΗΣ ΤΩΝ ΝΕΩΡΙΩΝ ΣΤΑ ΧΑΝΙΑ

Χρηματοδοτούμενο από την Περιφέρεια Κρήτης και τον Δήμο Χανίων,
υπό την εποπτεία του Υπουργείου Πολιτισμού / Εφορείας Αρχαιοτήτων Χανίων

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ΔΗΜΟΣ ΧΑΝΙΩΝ
ΠΟΛΥΤΕΧΝΕΙΟ ΚΡΗΤΗΣ

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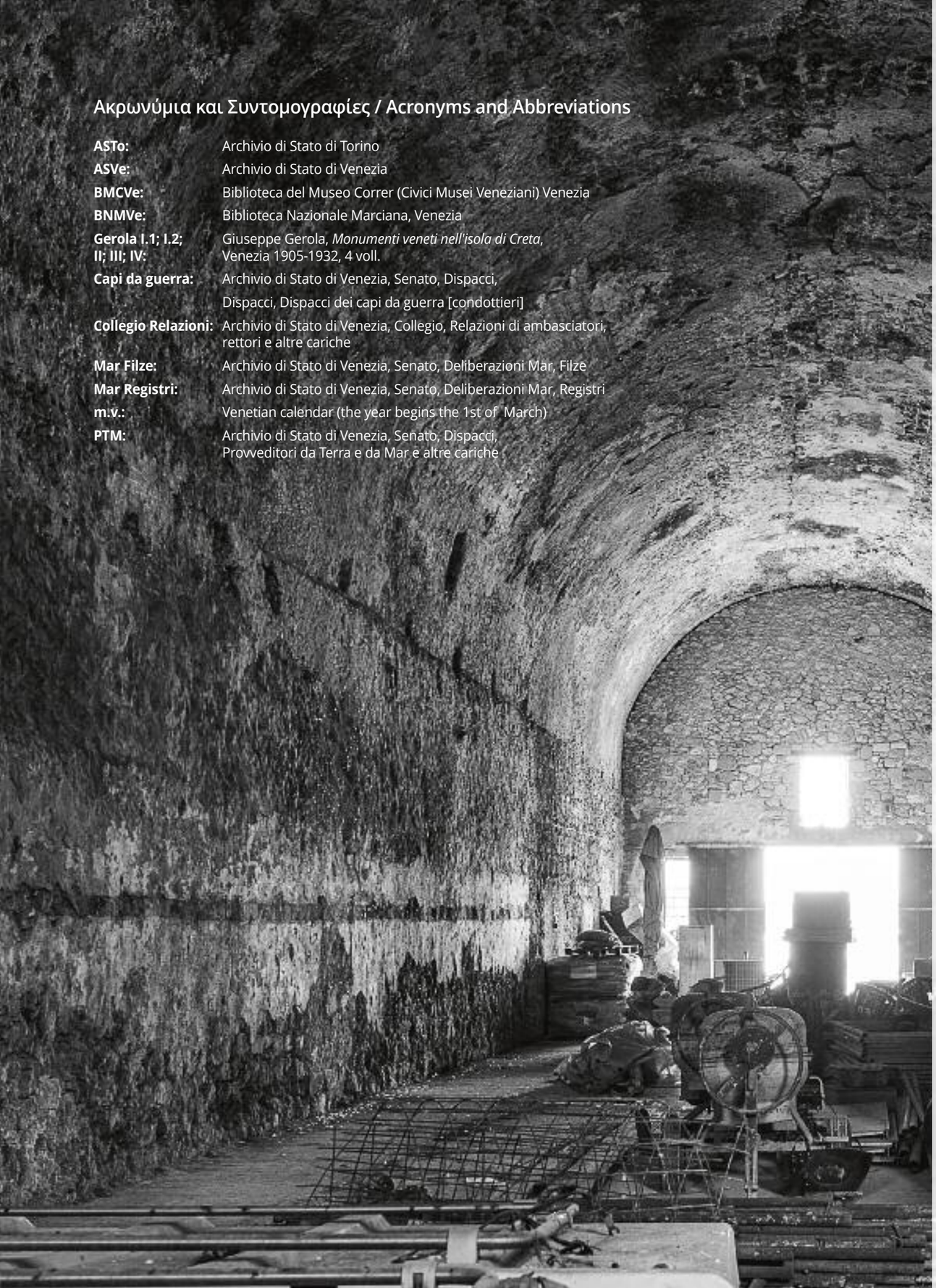
ΝΙΚΟΣ ΣΚΟΥΤΕΛΗΣ
ELISABETTA MOLTENI

ΧΑΝΙΑ 2023 CHANIA



## Ακρωνύμια και Συντομογραφίες / Acronyms and Abbreviations

| | |
|---|---|
| **ASTo:** | Archivio di Stato di Torino |
| **ASVe:** | Archivio di Stato di Venezia |
| **BMCVe:** | Biblioteca del Museo Correr (Civici Musei Veneziani) Venezia |
| **BNMVe:** | Biblioteca Nazionale Marciana, Venezia |
| **Gerola I.1; I.2; II; III; IV:** | Giuseppe Gerola, *Monumenti veneti nell'isola di Creta*, Venezia 1905-1932, 4 voll. |
| **Capi da guerra:** | Archivio di Stato di Venezia, Senato, Dispacci, Dispacci, Dispacci dei capi da guerra [condottieri] |
| **Collegio Relazioni:** | Archivio di Stato di Venezia, Collegio, Relazioni di ambasciatori, rettori e altre cariche |
| **Mar Filze:** | Archivio di Stato di Venezia, Senato, Deliberazioni Mar, Filze |
| **Mar Registri:** | Archivio di Stato di Venezia, Senato, Deliberazioni Mar, Registri |
| **m.v.:** | Venetian calendar (the year begins the 1st of March) |
| **PTM:** | Archivio di Stato di Venezia, Senato, Dispacci, Provveditori da Terra e da Mar e altre cariche |

# ΕΡΓΑΣΙΕΣ ΓΙΑ ΤΗΝ ΙΣΤΟΡΙΚΗ ΚΑΙ ΤΕΧΝΟΛΟΓΙΚΗ ΤΕΚΜΗΡΙΩΣΗ ΤΗΣ ΜΕΛΕΤΗΣ ΩΡΙΜΑΝΣΗΣ ΤΩΝ ΕΡΓΩΝ ΑΠΟΚΑΤΑΣΤΑΣΗΣ - ΑΠΟΔΟΣΗΣ ΧΡΗΣΕΩΝ - ΑΝΑΔΕΙΞΗΣ ΤΩΝ ΝΕΩΡΙΩΝ ΣΤΑ ΧΑΝΙΑ

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ALBERTO PÉREZ NEGRETE

# The shipyards and the fortification of Chania (1570-1599). Intricacies, problems, proposals[1]

## Planning a new territorial defence

Assessing the relationship between the shipyards of Chania and its fortification in the last thirty years of the sixteenth century is tantamount to offering an overview, within the limits of the space here, of the role of the Kingdom of Candia within the Venetian defence strategy of the maritime state. The chronological span chosen is not accidental. From the Cyprus War (1570-1573) on, the documents illustrating the events related to the expansion of the shipyards and the maintenance works of the Chania fortress point to such a close association between the two sites that it is possible to interpret the interventions carried out as the fundamental features of a new defensive design of the Cretan territory.[2]

The strategic importance of the island of Crete became evident as early as the end of the fifteenth century. Indeed, following the surrender of Negroponte (Chalkìda, island of Euboea) in 1470, Candia had a fundamental role: to intercept the Turkish armada should the Ottoman Empire decide to sail from Constantinople and cross the Dardanelles Strait with its fleets. These were the first moments in which the difficulty of protecting a fragmented, isolated dominion, united only by sea routes,[3] became apparent: problems, as we shall see, that would go unresolved during the period under review, as well as during the remaining Venetian rule on the island.

Geographical remoteness from Venice, the immense strength of the Ottoman Empire, thanks to its inexhaustible resources, as well as the unreliability of some of the fortifications in the area – in this case, Chania and Rethymnon – are just some of the negative aspects of the wars fought far from the lagoon and which highlight the inadequacy of a defence designed on the basis of experience gained on *terra firma* in the first half of the century. One of the first steps in the modernisation of Cretan fortifications dates back to the years 1518-1522, when *provveditore* Sebastiano Moro and *condottieri* Giano Maria Fregoso and Gabriele Tadino da Martinengo designed the new defences of the capital of the kingdom, Candia (Heraklion).[4] At the

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[1] Translation from Italian by Stephen Conway. The quotations from the sixteenth century documents have been translated into English, the original text is reported in footnotes. I would like to thank Nikolaos Skoutelis and Elisabetta Molteni for their trust and on-going discussions, as well as for taking me 'to the East'; Silvia Peressutti, for her amicable support; and Stelios Stefanakis, who provided me with some bibliographical sources in Greek and had the patience to translate some passages.

[2] On the shipyards of Chania I refer to the essay, in this volume, by Elisabetta Molteni; for the bibliography on the fortification of Chania see below.

[3] E. Concina, *La macchina territoriale. La progettazione della difesa nel Cinquecento veneto*, Roma-Bari 1983; E. Molteni, "Da Bergamo al Mediterraneo. La politica di difesa della Serenissima negli Stati da Mar", *Da Bergamo al Mediterraneo. Fortezze alla moderna della Repubblica di Venezia* (ed. by R. Frigeni and M. Resmini), Bergamo 2022, pp. 109-127.

[4] E. Concina, *Tempo novo. Venezia e il Quattrocento*, Venezia 2006, pp. 88-89; on the sixteenth century forti-

time, the memory of the League of Cambrai (1508-1516) was still very recent. It is not surprising therefore that the premises on which to renew the walls of the Cretan capital were modelled on the defences built in some of the cities of the Dominio di Terraferma that the Cambrai war experience had shown to be effective. It is in this context that the renowned Venetian chronicler Marin Sanudo notes that Candia "would be fortified like Padua and Treviso".[5] On the other hand, the territorial defence of Crete would always remain a problem, especially regarding the use of the territory as a 'defence machine', namely mutual protection between the various towns on the island. This is why the captain of Candia, Alessandro Contarini, wrote in his end-of-commission report (2 October 1532) that "to fortify the towns on the island requires a great deal of money, and they are so far apart that they cannot assist each other so quickly".[6]

Later, the interventions took on a new dimension in the third Venetian-Turkish conflict (1537-1540). Michele Sanmicheli (1484-1559) – initially assisted by Francesco Maria della Rovere (1490-1538), Duke of Urbino and *capitano generale* of Venice – was commissioned between 1538 and 1540 to continue and bring up-to-date the construction works begun earlier in Candia and to design the new bastion defences of Chania and Rethymnon.[7] Work continued throughout the second half of the century without keeping to regular criteria until the arrival of Giulio Savorgnan and Sforza Pallavicino, two military chiefs whose interventions focused on amending the serious defects of several fortifications – starting with Chania – the design of which appeared, with the exception of Candia, to lack the appraisal of one experienced in warfare.

On the other hand, the maritime defence of Cretan territory was continually 'challenged' by the various corsairs and Ottoman squadrons that proved they could enter the domain of the Republic of Venice without great difficulty. In fact, throughout the sixteenth century there are reports of offensives and raids that devastated the districts of Candia, Chania and Rethymnon: in 1522, the Turks plundered the coastline of Gerapetra (Ierapetra, on the south-west coast of the island facing Libya and Egypt); in 1527, squads of corsairs raided the port of Chania and even managed to seize two ships; Barbarossa (1478-1546) in 1538 – a few months before Sanmicheli's arrival on the island – plundered the Souda Bay; Dragut, in the last years of his life, assailed territory Rethymnon and Apokoronas (1562), the middle ground between the territory of Rethymnon and Chania.[8] During the Cyprus War, the Turkish army carried out two large scale attacks: in 1571, after landing at Souda, the Sultan's troops burned and ravaged the territory of Chania, even managing to "reach [...] very close to the city";[9] and, between 7 and 14 June of the same year, Uluch-Alì attacked the city of Rethymnon – previously abandoned by its inhabitants – destroying all the defences and prompting the subsequent decision by the Venetian authorities to build a fortress on the Paleokastro hill.[10] The incursions would never cease, as again in 1583 the *provveditore generale* Alvise Grimani warned the Senate of the

fication of Candia, see Gerola I.2, pp. 303-414 e I. Steriotou, "Le fortezze del Regno di Candia. L'organizzazione, i progetti, la costruzione", *Venezia e Creta* (ed. by G. Ortalli), Venezia 1998, pp. 283-302, especially, pp. 296-300.

5 Concina, *Tempo novo...*, op. cit., p. 81 "si fortificherà come Padoa e Treviso".

6 *I diarii di Marino Sanuto*, (ed. by G. Berchet, N. Barozzi, M. Allegri), Venezia 1879-1903, LVII (Venezia 1902), col. 10, cfr. Concina, *La macchina territoriale...*, op. cit., p. 219 "a fortificar le cità sono in l'ixola bisogna assà danari, poi è distante assà l'una di l'altra che non si pol cussì presto socorer".

7 Gerola I.2, p. 418 and ff.; J. Dimacopoulos, "Sanmicheli nei territori veneziani del Mediterraneo orientale", *Michele Sanmicheli: architettura, linguaggio e cultura artistica nel Cinquecento* (ed. by H. Burns, C. L. Frommel, L. Puppi), Milano 1995, pp. 210-221; Molteni, "Da Bergamo al Mediterraneo..., op. cit., pp. 126-127; also see note 54.

8 T. E. Detorakis, *History of Crete*, (translated by John C. Davis), Iraklion 1994, pp. 202-203.

9 BNM, Ms. It. VII, 631 a (=7476), "Rellatione dell'eccellentissimo signor Giacomo Foscarini provveditore generale in Candia" (1575), fol. 3v. "venir [...] fin sotto la città"; the event is partially described by the rector Bernardino Lippomano, see Collegio, Relazioni, Canea, b. 83, n. 3 (273), Relazione di Bernardino Lippomano (1572; presented 24 April 1573), cc. nn. [c. 2v.]: "per molte mie lettere scritte a Vostra Serenità et spetialmente alli 12 d'ottobre 1571 le diedi avviso della ruina et danni fatti per l'armata turchesca a quel territorio havendo abbrusciate tutte le biave et tutti li casali, eccetto alcuni che sono dentro alle montagne".

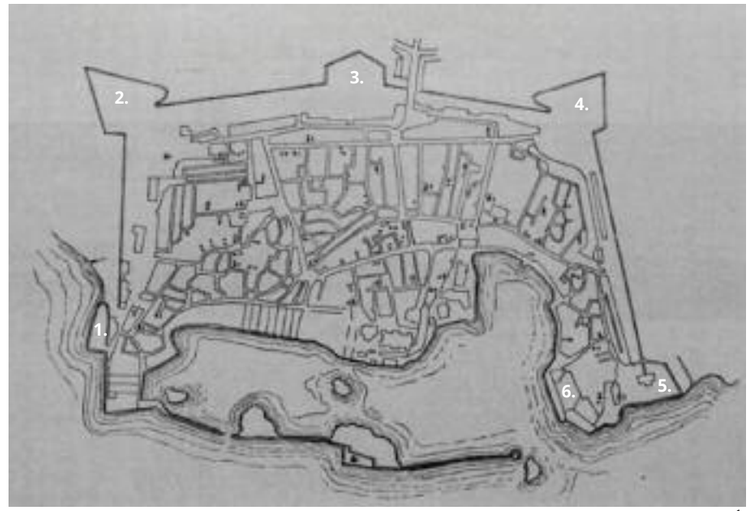
10 I. Th. Steriotou, *Οι Βενετικές Οχυρώσεις Του Ρεθύμνου (1540-1646). Συμβολή στη Φρουριακή αρχιτεκτονική του 16ου και του 17ου αιώνα Αγγλική*, Athens 1992, vol. A, pp. 70-72.



1.
Plan of the city of Chania (from Gerola I.1, p. 22, fig. 11) with the names of the bastions and variants: 1) Baluardo Michele or San Michele, Malipiero, Mocenigo, della Sabbionera; 2) Baluardo Santa Lucia; 3) Piattaforma or Baluardo ettimiotto; 4) Baluardo Schiavo, Lando, Martinengo or San Dimitri; 5) Baluardo Schiavo, Gritti, San Salvador; 6) Baluardo San Salvador, Castello San Salvador or Revelino del provveditore.

ease with which the Turks could land in the port of Garabuse (Gramvousa, on the west coast of Crete) from where "by this route they can readily learn of our affairs", and warned the Venetian government that "if [the] Turks seize this port on occasion of war it will be impossible for Your Serenity to come to the aid of this kingdom".[11]

Circumstances, therefore, highlighted the need to create a protection plan more suited to the specific scenario of the Domains of the Sea (*Stato da Mar*) and thus, from the 1570s onwards, the Republic set in motion a new protection strategy in which the territorial defence of the overseas dominion ceased to be entrusted exclusively to fortresses, conferring a very important role to the fleet.[12] In brief, if in the first half of the century ships were used as a means of mercantile transport and




1

to support a land defence entrusted to the city walls,[13] in the second half ships became the foundation of a maritime strategy aimed at defending the entire Cretan territory, on whose safeguarding the security of Venice itself was bound. This latter concept is expressed in the words of the *provveditore generale* Grimani who, in 1583, stated that the armada was to constitute "the principal defence both of this kingdom and of its entire state".[14] A similar line of thinking can be traced in the following century when Francesco Basilicata in his 1630 report – referring to the ports of Crete – writes that they had to "receive and safeguard the armada, on which, I would like to reply in conclusion, the salvation of this Kingdom depends".[15]

It is in such a context, in the last decades of the century, that the enhancing of

11 PTM, b. 510, f. 748, (despatch of 2 June 1583, *provveditore generale* Alvise Grimani) "mi è parso doverla rappresentare a Vostra Serenità acciò che la veda quanto e commodo ai Turchi passar di grecia in questo porto dalle grabuse et come facilmente per questa via possono sapere i fatti nostri ma quello che importa più è che se Turchi in occasione di guerra se impadroniranno di questo porto sarà impossibile che Vostra Serenità possa soccorrere questo regno come altre volte da me et da alti di maggiore autorità è stato detto et promettole che in ogni occasione che viene di [cancellato: guerra] ragionare di questo loco da tutti è approbato per cosa molto necessaria che ella vi pensi et vi proveda".

12 E. Molteni, "La scienza del fortificare", in E. Concina, E. Molteni, *"La fabbrica della fortezza". L'architettura militare di Venezia,* Modena 2001, p. 212.

13 J. R. Hale, "The first fifty years of a Venetian magistracy. The Provveditori alle Fortezze", *Renaissance. Studies in honor of Hans Baron* (edited by A. Molho and J. A. Tedeschi), DeKalb (Illinois) 1970, pp. 528-529, "[lo] stato nostro, il fondamento del quale, come a tutti è notissimo, sono le fortezze sì da mar come da terra", cfr. Concina, *La macchina territoriale*...op. cit., p. VII and note 14 (p. 189).

14 PTM, b. 510, f. 748 (despatch of 31 March 1583; *provveditore generale* Alvise Grimani) "la principal difesa si d'esso regno come di tutto il stato suo".

15 BNM, Ms. It. VII. 1683 (=8976), Relazione di Candia di Francesco Basilicata, fol. 33 r., "ricever et salvare l'armata, della quale mi giova di replicare, che in conclusione ha da dipender la salvezza di questo Regno".

naval structures and the various maintenance operations of the Cretan fortifications were to see the most exemplary case in the city of Chania. Indeed, in the light of the latest documentary findings, the shipyards can be considered a genuine military complex in which the construction of new *volti* (vaulted docks/shelters) for the protection of ships, the excavation of the moat, the construction of *cavalieri* (platforms used to gain altitude) and the defensive reorganisation of the port, especially of the Michiel bastion and the Lagonissi rock, all interact in its construction and material history.[16]

### The territorial defence of Chania: the Gulf of Souda

Before entering into the defensive design of Chania, it is worth briefly recalling a few general issues relating to the geographical location of the ancient city of Cidonia. Chania is situated in the north-west of the island of Crete, on a plain bordered by two peninsulas: to the west that of Rodopos, with Cape Spada as its most prominent point; and to the east that of Akrotiri, which extends seawards as far as Cape Meleca and which, with its rounded indentation, shapes the northern coastline of the Souda Bay. Some five kilometres from Chania, besides being a strategic point to reach the city by land, Suda Bay is protected at its mouth by a fortified rock (Paridomuni, formerly called Faronissi). Moreover, the area saw its strategic value increase due to the presence of salt pans that supplied the various cities of the Kingdom and even Venice itself with consequent economic benefits.[17]

In this topographical context, the aforementioned new strategy took the form of defending the coastline to avoid a potential enemy landing. This measure was among the various 'provisions' that, in March 1571, count Giovan Maria Martinengo reported to the *provveditore generale* Marin di Cavalli and to the new governor of Candia Latino Orsini to "torment the enemy should they land in this area [Chania]".[18] To this end, on 20 March, Cavalli announced to the Senate an inspection of the port of Souda to establish how it could "prevent the disembarking of enemies".[19] The need for this action – further confirmed by a consultation between Cavalli, Orsini and Moretto Calabrese – was immediately implemented by the *provveditore* of Chania Luca Michiel who, in April the same year, commissioned captain Leon Remusati da Pesaro to carry out a reconnaissance of the entire territory of Chania.[20] Remusati's detailed report, dated 23 April 1571 and hitherto unpublished, focuses on the description of the Akrotiri peninsula east of Chania and the Gulf of Souda.[21] As a soldier skilled "in the things of war to recognise which places are good for the enemy to disembark",[22] the Pesaro-born soldier paid special attention to the quantity of boats that natural harbours may contain; to the elements of nature that could be used to repel the enemy with land forces in the event of a landing; or to the existence of *grossa* (salty) and *buona* (fresh) water wells that could increase the attacker's resistance. It is clear from the captain's detailed writing that avoiding an enemy landing at Chania, especially at Souda, was an impossible enterprise. But, in truth, Remusati's conclusion is not new: already in the previous report by captain Alessandro Contarini (2 October 1532) – as in subsequent ones by the rectors – the strategic importance of the gulf emerges and the construction of "a castle on the rock"[23] is recommended; the issue is also taken up by Francesco Maria della Rovere who, making use of cartographic material and "that information that those having knowledge of the place have been able to give me", concludes that despite "the rock being fortified, the inlet to the port remains so wide that it cannot prevent not only by night, but also by day, any ship from entering without a significant offensive".[24]

The problem, which remained unresolved at the time, became a priority in 1574 with the arrival of the *provveditore generale* Giacomo Foscarini, who immediately thought of protecting the *culata* of the gulf (i.e. the deepest part of the inlet) with the construction of a *porporella*, namely an artificial embankment of stone boulders to defend the coastline, which would act as a dam to protect the port from unwelcome landings as well as from the onset of currents. The proposed solution, once again, was nothing new: the Duke of Urbino, in his report on the fortifications of Crete in 1538, mentions that even if a *porporella* were to be built, the distance to be covered is so great and the water level so high that it would be a "thing of infinite expense and considerable time", namely "impossible to do".[25] However, from Foscarini's viewpoint, the Republic's economic interest in the area was so great that in less than two years, the *provveditore* repaired the damage caused to the salt pans by the rains and built a *porporella*, which in 1576 "has already been completed despite common opinion thanks to the diligence of his Excellency [Foscarini], who has had more work done in the 25 days since he arrived at the Souda than had been done in the previous four months by those having the main task".[26] The barrier was also renovated by the *provveditore* on subsequent occasions, for example in October 1577, when he records having lengthened the work 260 meters ("150 passa"),[27] an operation carried out using labour that was to be employed in the fortification of the city. Reliable confirmation can be found a few days later, when Luca Michiel not only reports to the Senate on the "marvel" of the work, but also its defensive effectiveness, declaring that "neither a *fisolera* nor a galley would pass through it".[28]

Interventions of this kind were recorded until the end of the century, demonstrating an awareness on the part of the Venetians of how the defence of an island territory could be structured to impede and fight the enemy at sea and prevent them from landing. The interventions in the shipyards and port of Chania were part of such acquired awareness.

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[16] For the various aspects concerning the materials and supplies of the shipyards of Chania, I refer to the essay, in this volume, by Silvia Peressutti; for the names of the different bastions of the city of Chania and their variants, see fig. 1.

[17] Gerola IV, pp. 149-150.

[18] PTM, b. 501, f. 730 (despatch of 25 April 1571, rector Luca Michiel) "travagliar il nimico in occasione venisse per sbarcar in queste parti [Canea]".

[19] PTM, b. 501, f. 730 (despatch of 20 March 1571, *provveditore generale* Marin di Cavalli) "prohibire il smontar alli nemici".

[20] On Remusati, see Capi da guerra, b. 8, "Remussati Leone"; between 1589 and 1590 he inspected Canea (19 July 1589), the fortress of Souda (6 February 1590) and the fortress of Garabuse (4 December 1590), cfr. Gerola, I.2, p. 434, note 1; p. 527, note 5; p. 498, note 6 and 10; IV, p. 101. Apparently, on 5 October 1593, he was present at the Strasoldo castle in Friuli together with, among other important protagonists in the events now being studied, Giacomo Foscarini and Giulio Savorgnan, see P. Antonini, *Del Friuli ed in particolare dei trattati da cui ebbe origine la dualità politica in questa regione. Note storiche*, Venezia 1873, p. 302. Later, in 1596, he was in Dalmazia, *Monumenta spectantia historiam slavorum meridionalium. Commissiones et relationes Venetae (Mletačka uputstva i izvještaji)*, vol. 48, t. V (1591-1600), Zagreb 1966, pp. 155, 156, 172, 234, 253; *Inventari dei manoscritti delle biblioteche d'Italia, opera fondata dal prof. Giuseppe Mazzatinti*, (ed. by Albano Sorbelli), vol. 48, Pesaro (Biblioteca Oliveriana), Firenze 1968, pp. 73, 84.

[21] PTM, b. 501, f. 730 (report dated 23 April 1571, attached on the despatch of 25 April 1571, rector Luca Michiel, see note 18 above and Appendix)

[22] PTM, b. 501, f. 730 (despatch of 25 April 1571, rector Luca Michiel), "ho dato carico al nostro capitano Leon Remusati da Pesaro havendolo conosciuto nelle cose di guerra di riconoscer quali luochi seriano buoni per sbarcar al nimico".

[23] See note 6 above, "uno castello sopra il scoio".

[24] Concina, *La macchina territoriale...*, op. cit., pp. 107-108 "quella informazione che me ne ha potuta dare chi ha informazione del luogo truovo che ancorché il scoglio si fortificasse, l'intrata del porto resta tanto larga che non può impedire che non solamente di notte, ma di giorno non entri legno senza offesa d'importanza"

[25] Concina, *La macchina territoriale...*, op. cit., p. 108 "cosa d'infinita spesa e di longo tempo [...] impossibile a fare".

[26] PTM, b. 505, f. 738 (despatch of 14 October 1576, rector Angelo Barozzi) "è di già ridotta fuori della commune opinione al suo buon fine per la diligenza di sua Eccellenza [Foscarini] havendo fatto far più opera da 25 giorni in qua che venne alla Suda di quello che s'era fatto in quattro mesi precedenti da coloro che ne haveano il principal carico".

[27] PTM, b. 507, f. 741 (despatch from Chania of 8 October 1577, *provveditore generale* and *inquisitore* of the Kingdom Giacomo Foscarini): "anco restar di significarle che la porporella della Suda è del tutto finita fino alli 150 passa che forono dessegnati restando solamente che si vadino accommodando alcuni lochi che si fa con pochissima cosa dove per il gran peso della machina unendosi et restringendosi le pietre insieme lo suol caline"; 1 *passo veneziano* = 5 *piedi veneziani*, 1 *piede veneziano* = 0,347m.

[28] PTM, b. 507, f. 741 (despatch from Chania of 5 November 1577, *provveditore generale* Luca Michiel) "l'ho ritrovata [la porporella] con meraviglia mia del tutto finita, in stato che non vi passerebbe una fisolera nonché una galea, havendosi in essa affaticato molto il magnifico Messer Simon Salamon sopracomito et se ben potria essere che in questi principij la calasse qualche poco per le furie delle acque da greco tramontana, al quale è quella bocca sottoposta, questo importeria poco perché con picciolissima spesa facendovi ogni anno gettar qualche sasso si venirebbe a mantenerla con riputatione di quel porto". The *fisolera* is a very light, narrow and long Venetian boat used for the hunting of *fisoli* (water birds).

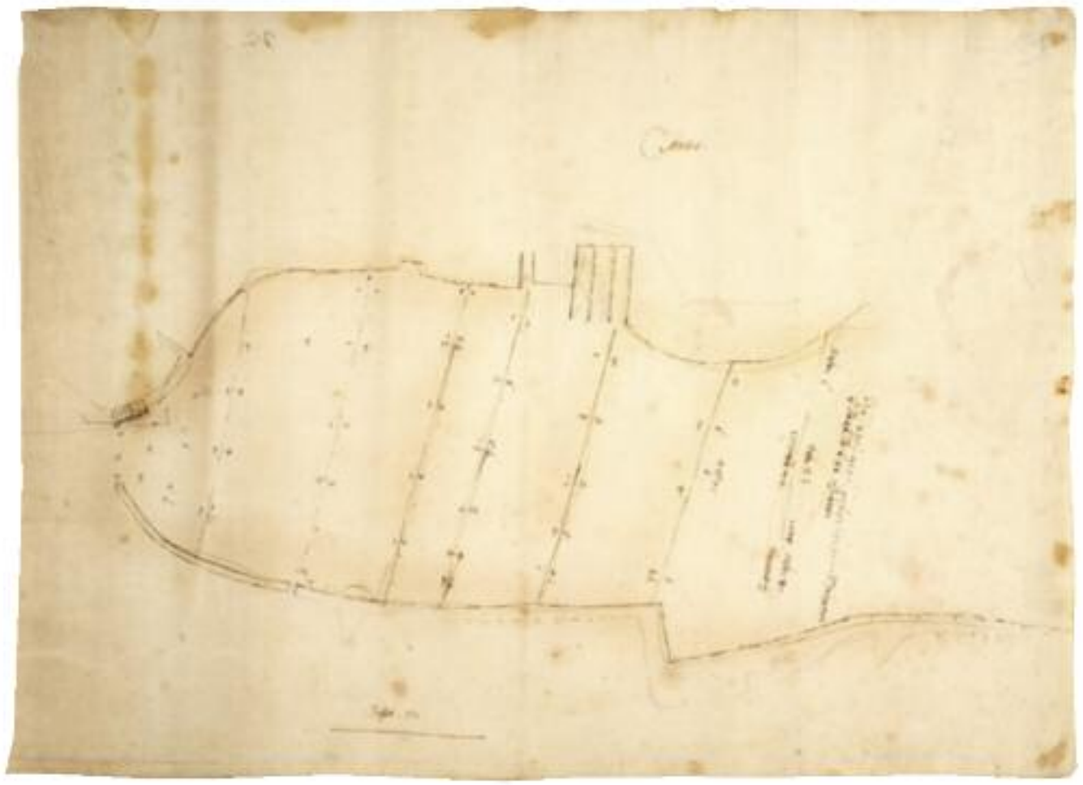
## Chania: the shipyards and the harbour

While the first inspections were being carried out in the area, the effects of this new strategy were reflected in the city, especially in the extension of the shipyards and the reorganisation of the port, areas that took on a new significance in the fortified structure of Chania. In particular, as can be deduced from the central management entrusted to the *provveditori alle fortezze*, the shipyard was not to be considered a place exclusively bound to shipbuilding, but as a key military structure to be safeguarded and, above all, expanded. By preserving the shipyard, Venice would obtain a twofold advantage: it could count on the presence of an army ready to act at short notice on its own island and, at the same time, it could use these buildings as shelters for vessels during the winter, thus avoiding their deterioration.

One of the main problems related to the increasing number of *volti*, but also to all the strategic issues noted above, was the maintenance of the harbour, in particular, its silting up.[29] The problem actually goes further back. As early as 1554, the port area was so heavily silted up that the rector Leonardo Loredan had to build two *cloache* (drainage channels or canals) in the Sabbionera and in the platform trench, respectively; these were intended to direct the rainwater away from the port because as it naturally runs down the irregular city streets, it causes the port to silt up. Loredan also mentions that there were plans for two more drainage channels, one near the San Dimitri bastion and the other at the "Cicalado", namely close to the church of San Giorgio located near the aforementioned platform.[30] Apparently, these works did not go hand in hand with the necessary excavation of the port, which proceeded sporadically in the following years, also due to various difficulties, as shown in the report by rector Daniele Venier (1559). Indeed, this latter recalls that in some places the port is "not deep enough *passa* 3 4 and 5" and that the operation to be carried out is more complex than a simple excavation, given that the bottom is "for the most part solid rock not fit to be hollowed out"; this is why the rector left the conspicuous sum of 11,000 *perperi* (coins) so that his successor could tackle the task.[31] Later, in the same vein, we know that the *provveditore* Luca Michiel continued the work in 1570[32] but, already two years later, the rector Bernardino Lippomano noted in his end-of-appointment report that he could not deal with the excavation of the port due to a lack of funds.[33]

A valuable document of the compromised situation of the port of Chania is the map preserved in the Biblioteca Marciana in Venice, which shows a sounding of the entire harbour[34] (fig. 2). Of uncertain date,[35] the drawing shows the measurements of the different depths on both sides of various lines tracing the sounded area, with the highest number on the right (the maximum depth) and the lowest (the level of silting) on the left. As a result, it can be seen that the most frequently silted part is the one in front of the area of the shipyards, leading to an almost total silting up of the harbour, if the indicated measurements are taken, in one case, as much as half a βάθος (i.e., bottom, depth of the sea) out of the six available.

The period in which the deficient state of the port motivated the will of the Venetian Senate coincided with the presence in the city of Pietro Lando, the rector to whom is owed the major breakthrough in the construction of the shipyards. Lando's requests to the government of the *Serenissima*, traceable to his first years in office, became very assertive on 16 February 1580, when the rector asked for hoes to be able to dig underwater and timber to construct two rafts to carry out the work as soon as possible since if "he does not provide them, it will not be long before they can no longer be used".[36] A year later (8 August 1581), faced with the Republic's inertia, Lando again pointed out the port's compromised situation, this time enclosing a drawing that cannot currently be found.[37] The despatch outlines a panorama in which "the port has filled up with mud in the area of the arsenal due to the waste from the city that almost completely runs in", resulting in "that only a third is practicable for the ships". This situation prompted Lando to design a channel, on whose location no further details can be found (perhaps the restoration of those built by Loredan?). The solutions proposed by the rector were: to cover the entire port space with shipyards "because people fill up the port on that side with the garbage they throw in"; and to dig out the port manually "as is customary in the arsenal in Venice".[38] Lando's requests were not answered until the end of the year (3 November 1581), when the Senate notified that it had deposited with the magistracy of the *provveditori alle fortezze* 2000 ducats, earmarked precisely for the excavation of the



2.
Depth measurements of Chania's port with annotations in Greek, BNMVe, *Carte topografiche e piante di città e fortezze*, It. VI, 188 (=10039), tav. 13.

[29] On the port of Chania, see Gerola IV, pp. 99-106.

[30] Collegio, Relazioni, Canea, b. 83, n. 1 (271), Report by Leonardo Loredan (1554), cc. nn. [c.5r.]; even in the seventeenth century, the first church in Chania under the title of San Giorgio was nicknamed "cicalado", see L. Finicchiaro, *Le glorie del gran Martine di S. Chiesa S. Giorgio ricavate dagli scrittori, si antichi, come moderni che sin' hora di lui hanno scritto*, Palermo, per Giuseppe Bisagni, 1658, p. 211; the church of "s. Zorzi" is visible in the anon. map kept in the Biblioteca del Museo Correr di Venezia, *Pianta della Citta' della Canea, fortezza, mura, edifici, porto*, Cl. XLIVb, n. 0930.

[31] Collegio, Relazioni, b. 62, to. 1, Report by Daniele Venier (1559), fol. 80r.; another copy of the report in Collegio, Relazioni, b. 83, n. 2 (272), cc. nn. [c.1r.] "manco profondo passa 3 4 et 5 per il più rocha over sasso non atta esser cavata".

[32] Collegio, Relazioni, b. 81, n. 5 (300), Report by Piero Navagero (1570), cc. nn. [c. 3v.] "Vi è poi il porto della canea, nel qual si potria tener galee cinquanta in circa senza pallamento, cavandosi come si fa tuttavia con diligentia, mercè di quel suo Clarissimo Proveditor Michiel"

[33] Collegio, Relazioni, Canea, b. 83, Report by Bernardino Lippomano (1572; presented 24 April 1573), cc. nn. [c. 1v.]

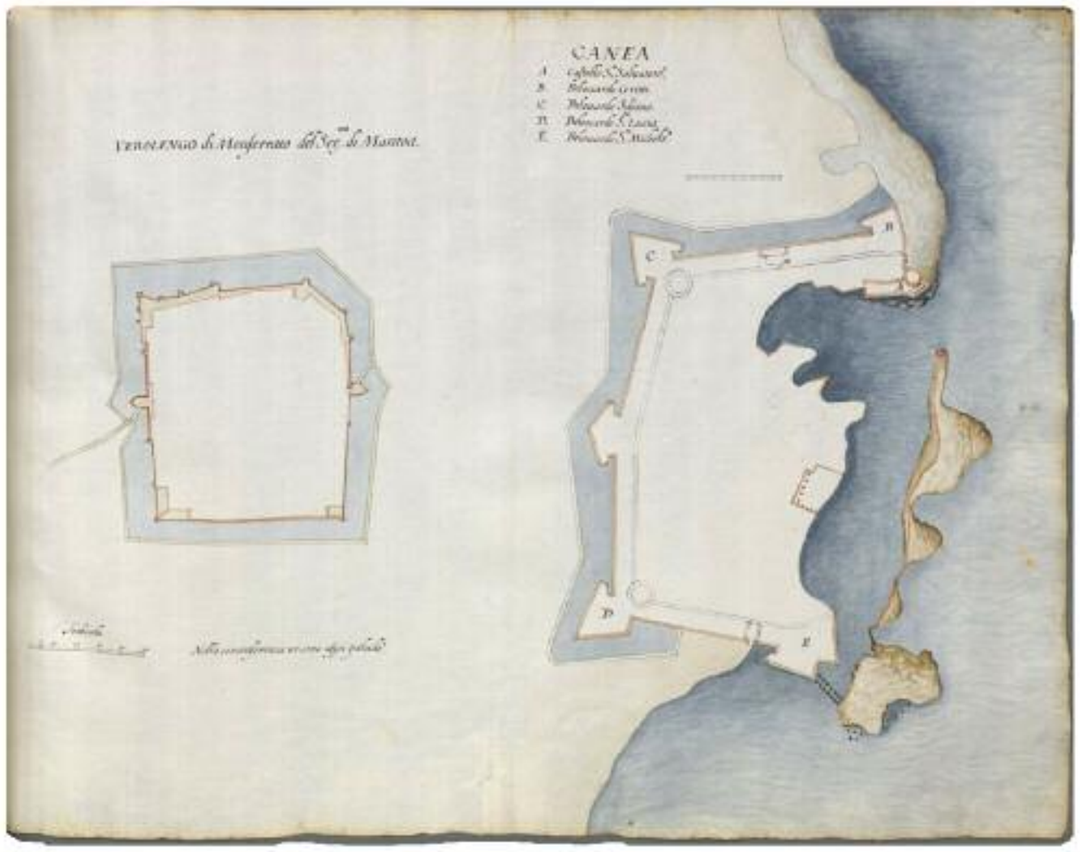
[34] BNM, Ms. It. VI, 188 (=10039), *Piante di città, fortificazioni e carte geografiche manoscritte dei sec. XVI e XVII*, [13] (13/19): "Canea", (31.7 x 42.0cm).

[35] The dating of this drawing is very difficult to establish because of the three *volti* represented, that is the number of arsenals that the city maintains from 1528 to 1568.

[36] PTM, b. 508, f. 743 (despatch of 16 February 1579 [m.v.], rector Pietro Lando) "[se la] Serenità Vostra mi facesse haver vinti badili da cavar sotto acqua et i legnami et ferramenta per far dui zatte per poter cavare questo porto, il quale ne ha molto di bisogno essendo atterrato molto et atterrandosi ogni di più di modo che ci non li provede non passerà molto tempo che non si potrà piu servirsi di esso".

[37] Drawing, according to Gerola, "still preserved", of which the scholar gives no further details, Gerola IV, p. 101.

[38] For all citations between the previous note and this one, see PTM, b. 509, f. 746 (despatch of 8 August

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port, and that it had authorised the *provveditori* and *patroni all'Arsenale* to send the material requested by the rector.[39]

Unfortunately, news on the maintenance of the port fell silent during Giandomenico Cicogna's rectorate. The only reference traced to date points to the continuation of the work begun by Lando. On 3 March 1583, Cicogna asked for "more timber to make rafts for the excavation of the port".[40] However, thanks to the report by the *provveditore generale* Alvise Grimani, we know that new difficulties emerged between 1583 and 1585. Indeed, the *provveditore*, reminding the Venetian government of the pressing need to excavate the island's harbours, pointed out that the harbour of Chania was in a very bad state since "a great number of stones had been thrown" near the harbour mouth and wharves, which, together with the action of the sea, were the main cause of the infilling of the area. The situation was so difficult to resolve that the workers had to make use of some machines, such as "a certain wooden device in the Santa Lucia trench and then with some steel-toothed rasps in

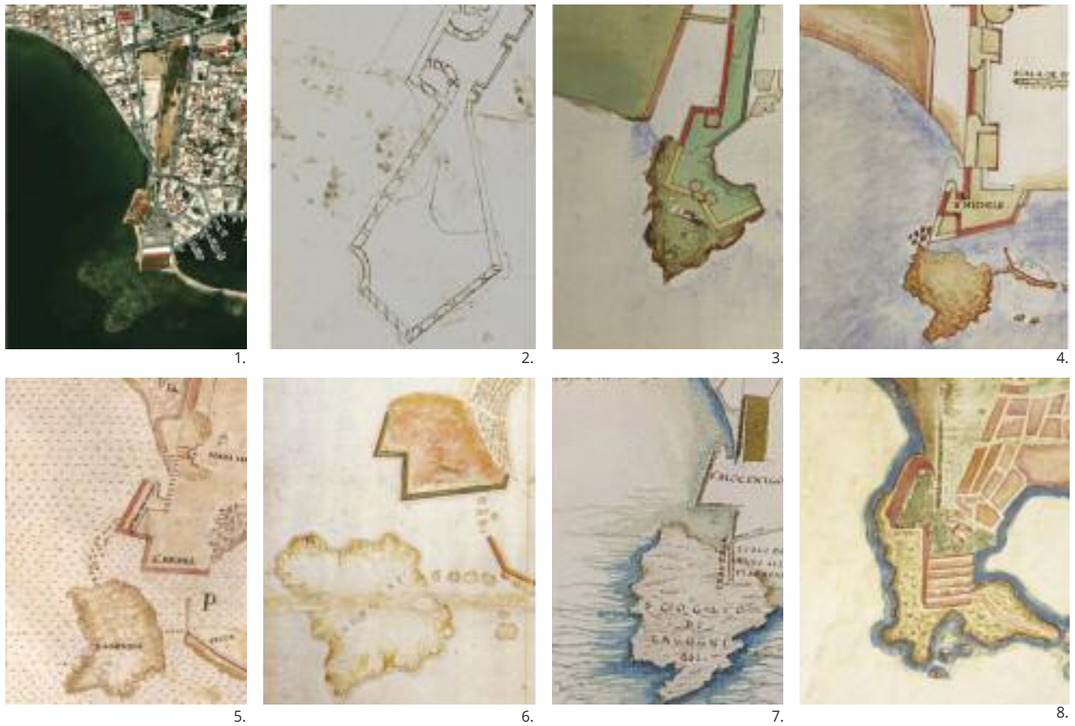
3.
*Canea*, München, Bayerische Staatsbibliothek, *Piante di fortezze d'Italia, d'Ungheria, di Fiandra e di Francia*, Cod. Icon. 141, fol. 17 r.

1581, rector Piero Lando) "il qual porto si ha atterrato molto da la parte del'arsenal per l'immonditie de la città che vi correno quasi tutte dentro [...] a pena il terzo di esso è buono per esse nave [...] et staria bene che particolari non havessero da far su quella riva ch'atterrano il porto da quella parte con le scovazze et altri immonditie che vi gettano dentro [...] et si va atterrando ogni di più al qual porto li faccio far un certo condutto per divertir che l'immonditie de la città non vi corrino dentro ma non vi vedo miglior rimedio che farlo cavar con i badili et con le zattere come si suol far ne l'arsenal in Venetia".

39 Mar, Registri, 45, fol. 83r.-v. (two resolutions of 3 November 1581, the first to the *provveditore* of Canea announcing the financial sum granted, and the second to the *provveditori* and *patroni all'Arsenale*, authorising the sending of the material).

40 PTM, b. 510, f. 748, (despatch of 6 March 1583, rector Giandomenico Cicogna) "altri legnami per far le zattere per l'escavation del porto".





1. 2. 3. 4. 5. 6. 7. 8.

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4.
Comparative table of the rock of Lagonissi: 1) Current aerial photo; 2) plan kept at the Biblioteca Comunale di Treviso (see fig. 5); 3) and 4) plans kept at the Archivio di Stato di Torino (see fig. 6 and 9); 5) plan of the Atlante Mormori (see fig. 7); 6) plan of the port and shipyards of Chania ("Grimani project"), BMCVe, Cl. XLIV n. 480; 7) plan attached to the report by Annibale Gonzaga (see fig. 8); 8) plan of the city of Chania, BMCVe, inv. Cl. XLIVb n. 0930.

the shape of pontoons, in the shape of those that excavated the small harbour at Corfù, and with rafts and regular shovels".[41] Grimani, however, could only partially resolve the problem, intervening above all in the area of the piers and the port mouth where "now the galleys berth everywhere". Alas, the most important part, the area in front of the shipyards, still had to be fixed, which the *provveditore* hoped his successor would take care of, given that "in six months all the rest will be excavated, and most of all the arsenal, which is in great need".[42]

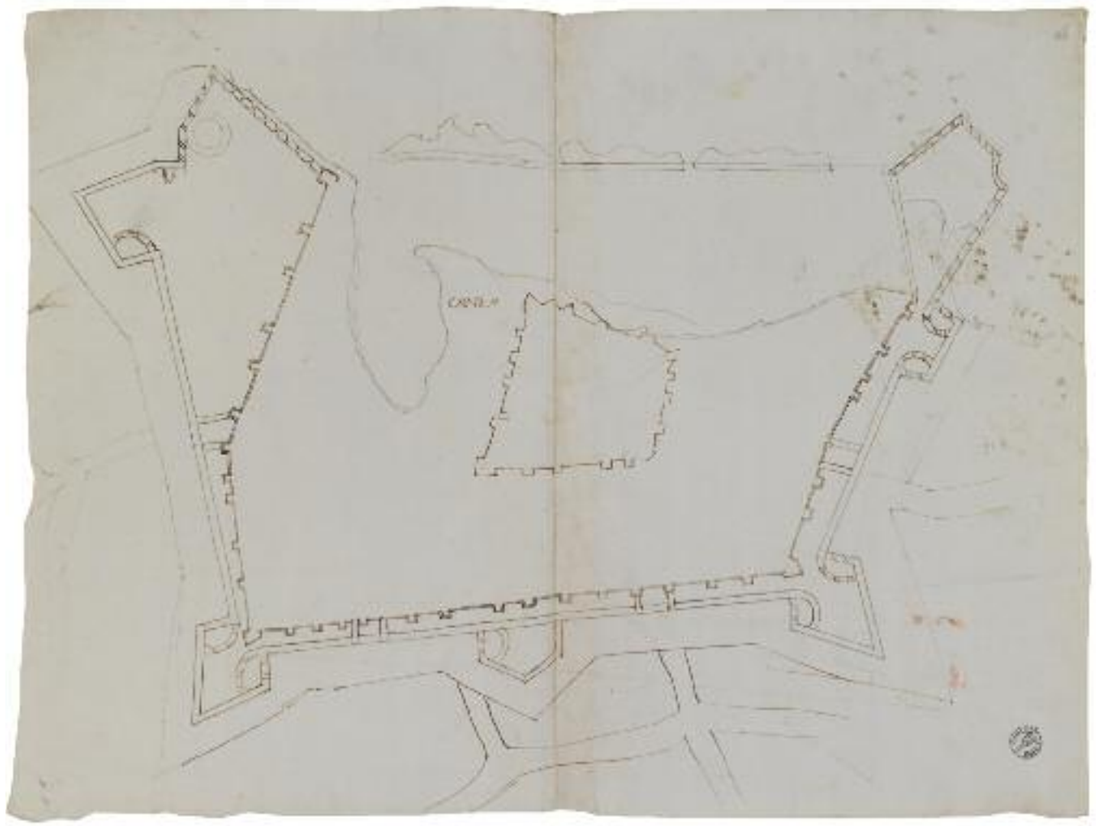
From a partial perusal of the documentation, it appears that work continued sporadically in the following years. The 1598 report by *provveditore* Benedetto Dolfin shows how the port was again "in a very bad state" due, once again, to the refuse dragged along by the rainwater.[43] Besides, the overall situation had worsened considerably: now galleys could not be launched into the water except with a southerly (*ostro*) or south-westerly (*garbino*) wind, i.e. when the port fills up a little more with water. Nevertheless, a slight improvement was seen in the early seventeenth century with the *provveditore* Benedetto Moro, builder of the last *volti* of the shipyard – the seventeenth – on the west side. In fact, using the abovementioned equipment, Moro wrote that he had recovered "now six and seven feet of water in places that before there was no more than two or three".[44]

41 ASVe, Archivio privato Correr Santa Fosca, b.14, reg. 263, Report by Alvise Grimani, *provveditore generale* (1585), fol. 50v. "un certo artificcio de legno in fosa de santa lucia et poi con alcune raspe con li denti di ferro in forma di cassoni in forma di quelle che cavano il mandachio a Corfù et con zattare et badili in forma ordinaria".

42 ASVe, Archivio privato Correr Santa Fosca, b.14, reg. 263, Report by Alvise Grimani, *provveditore generale* (1585), fol. 51r. "che hora le gallere mettono scalla da per tutto, cosa che per avanti non si poteva fare, et chi continuerà a detta essa [ca]vatione in sei mesi si cavera tutto il resto et massime per mezo l'arsenal che vi ne è di grandissimo bisogno"

43 Collegio, Relazioni, Canea, b. 83, n. 6 (275), Report by Benedetto Dolfin (1598), cc. nn. [c. 6r.] "in cattivissimo stato".

44 BNM, Ms. It. VIII. 1523 (=8682), Report by the engineer Angelo degli Oddi to the *provveditore generale* Benedetto Moro, fol. 789r. "[ci sono] ora piedi sei e sette di acqua in luoghi che prima non ve n'era più di doi o tre".



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5.
Girolamo Sanmicheli (?), *Canea*, plan of the town, Biblioteca Comunale di Treviso, Ms. 1019 tav. 40.

## The rock of Lagonissi: between land and naval defence

A point of great interest – little considered among the bibliography – where the needs of defence, port organisation and the expansion of the shipyards are all intertwined is the Lagonissi rock, i.e. the small islet to the north-east, a short distance from the Sabbionera, where the port remained open. From the absence of references in the documentation on the possible entry of ships from that area, it can be deduced that the rock is an impassable connection, especially due to the rocks that are clearly depicted in the plan of Chania preserved in Munich,[45] as well as in various historical maps (fig. 3 and 4). Despite this, the area poses two problems of a conservation and military nature: on the one hand, this space remains open to sea currents, facilitating the entry of debris brought in by the sea; and, on the other, the proximity of the rock to the city initially raised some concern over the possibility of an enemy landing in the area. Such concern, however, can only be traced in two maps dated between 1548 and 1555, preserved in the Biblioteca Comunale di Treviso and the Archivio di Stato di Torino,[46] respectively (fig. 5 and 6).

[45] Bayerische Staatsbibliothek (BSB), *Piante di fortezze d'Italia, d'Ungheria, di Fiandra e di Francia*, seg. BSB-Hss, cod. icon. 141, fol. 17r.

[46] Biblioteca Comunale di Treviso, ms. 1019, cc. 82-83, tav. 40 (Fondo cartografico, mappa n. 189), publish in *Fortezze veneziane dall'Adda all'Egeo: le difese della Repubblica di Venezia nei disegni della Biblioteca comunale di Treviso (secoli XVI - XVIII)*, (ed. by S. Tosato), Venezia 2014, pp. 168-169, and S. Tosato, *I Sanmicheli ingegneri della Serenissima. Scritti e disegni*, Crocetta del Montello 2016, pp. 174-175; ASTo, Sezione Corte, Biblioteca antica dei Regi archivi, Architettura militare, disegni di piazze e fortificazioni, parte su pergamena (Architettura Militare), Vol. V, *Canea. Pianta delle mura, fortificazioni e porto,* foll. 145v.-146r. The detailed examination of these drawings will soon be the subject of a specific contribution by the author.



6.
*La Canea*, ASTo, Architettura militare, Vol. V, f. 145v-146.

7.
Chania, planof the town, ASVe, Atlante Mormori, c. 66.

6

First of all, it should be noted that the two maps share a distorted territorial (as well as dimensional) relationship between the rock and the area of the Sabbionera and the Koum Kapi, i.e. the bay outside the walls opening to the east. The coincidence seems attributable to the same intention, namely to close the port by redoubling the control of the coast with respect to the Gritti bastion and the San Salvador castle, located at the maritime entrance to the city. In this respect, the author of the Trevisan map – according to Tosato's proposal, Gian Gerolamo Sanmicheli – designed a curtain wall with 23 embrasures extending out from a platform built in the Sabbionera and then along towards the cliff, adapting to the geography of the site and forming an unusually shaped layout. On the other hand, as a result of the (inexact) proximity between the rock and the city, the author of the Turinese map combines in a single construction the defence of the Sabbionera – reduced to a short stretch of curtain wall with a firing position towards the Santa Lucia bastion – and the fortification of the islet, only partially taken up by a curtain wall turned inwards with two embrasures towards the sea. These projects show a certain correspondence to the

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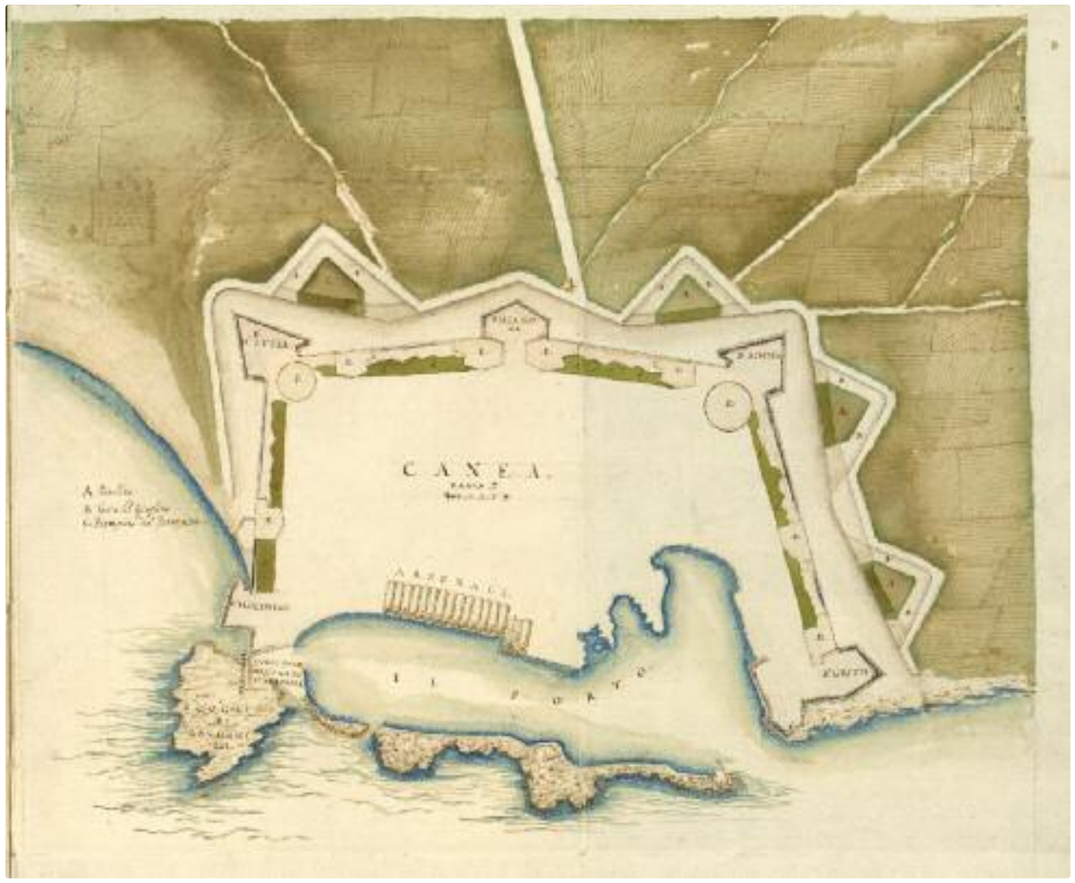


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8.
*Canea*, drawing in the report by Annibale Gonzaga, ASVe, Collegio, Relazioni, b. 81.

words of *provveditore* Loredan (1554), who stated that after completing the bastion of the port mouth (Gritti-San Salvador) "it will then be necessary to continue the wall from the Sabbionera up to the bastion that will be built on rock on that side, and once this is done, the city will truly be in a fortress".[47] An operation that, according to the rector Daniele Venier (1559), "will not be very costly, because [...] it will be built on the rock and moreover the stones will be cut from the aforesaid rock that will for the most part make the wall";[48] in any case, the work would never be carried out.

With the exception of Loredan, of Venier and the Sanmichelian coterie, the fortification of Lagonissi convinced neither the *condottieri* nor the *provveditori*. Therefore, the thinking of Francesco Maria della Rovere was again taken up, who in 1538, on evaluating Michele Sanmicheli's drawings and other information, mentioned that the inclusion of the cliff in the defensive circuit should be "considered well before it is brought into effect" so as to avoid wasting resources.[49] The area remained vacant and without fortifications throughout the second half of the century, until the need

[47] Collegio, Relazioni, Canea, b. 83, n. 1 (271), Report by Leonardo Loredan (1554), cc. nn. [c. 4v.] "sarà poi da seguitare la muraglia dalla Sabbionera fino al bastion che si die far sopra il scoglio da quella banda, e ciò fatto quella città sarà veramente in fortezza".

[48] Collegio, Relazioni, Canea, b. 83, n. 2 (272), Report by Daniele Venier (1559), cc. nn. [c. 2v.] "non li andarà molta spesa, perché [...] havendosi da fabricar sul sasso vivo, et più li tagliarà le pietre su il ditto scoglio che farà pe il più la muraglia".

[49] Gerola I.2, p. 419; Concina, *La macchina territoriale...*, op. cit., p. 107 "considerare molto ben prima che se ne venisse all'effetto".



9.
*Cania*, ASTo, Architettura militare, Vol. V, f. 143v-144.

for new *volti* for galleys led to constructing the Arsenali Nuovi in the late 1590s.[50] The situation at the Sabbionera, however, had definitely changed: as the map in the Mormori Atlas shows (fig. 7), there now stood a scissor-shaped bastion – emplaced during the rectorate of Luca Michiel (1564-1567) and later upgraded, with works of varying consequence, by the rector Francesco Malipiero (1590) and the *provveditore generale* Giovanni Maria Mocenigo (1593) – from which a transverse wall, the so-called *traversa*, had to be built, extending from the far northern face of the bastion towards the rock, so that it could be used as a 'shoulder' (*spalle*) for the new *volti*: a wall, besides, clearly visible, though not built, in a drawing attached to Annibale Gonzaga's report, dated 1599 (fig. 8).[51]


9

The connection between the city and the islet by means of the transverse wall is associated with another work linked closely to the naval consolidation: the construction, to the west, of the last *volto* erected as a continuation of the older buildings by the general *provveditore* Benedetto Moro (1599-1602). In fact, to carry out this last operation, Moro had to cut "a piece of mountain", i.e. part of the rock where the old castle stood; this rock was then reused by the *provveditore* in such a way that "having cut it [the stones], it served, both to clear that spot, as well as to prepare the stones needed for this other building [the *traversa*]".[52] With the building of the *traversa*, the *provveditore* – assisted by the rector Daniele Gradenigo[53] – not only

[50] Gerola, I.2, pp. 427, 429, 437-441: Malipiero enlarged the side facing the Koum Kapi by lengthening it towards the Sabbionera gate, whereas Mocenigo finished the work by constructing the rounded part of the bastion ("orecchione"), which is missing both in the Mormori map and in the second plan of Chania kept at the ASTo, Architettura Militare, Vol. V, Canea. Plan of the walls, fortifications and harbour, ff. 143v, 144 (fig. 9); rounded part of the bastion that must have ceded due to the action of the sea as well as several earthquakes in 1595.

[51] Collegio, Relazioni, b. 81, Report by Annibale Gonzaga, presented in Collegio 11 December 1599, "Relatione del Regno di Candia del signor Annibal Gonzaga con un raccordo di aggionger difese alla fortezza della Canea co'l dissegno".

[52] S. Spanakes, Μνημεία Κρητικής Ιστορίας, Ηράκλειο 1958, IV, pp. 30-31 "Imperò che, dovendo io secondo l'ordine della mia comissione far la Traversa al scoglio di Laconissi per coprire et difendere il Porto al Capo di Levante, mi sono valso di quella pietra nel detto lavoro, di modo che, et la materia che si è cavata da quel Monte, et la fattura fattasi a tagliarla, ha servito, et a disgombro di quel luogo, et a preparatione di pietre che erano necessarie per quest'altra fabrica, le quali si haveria convenuto mandar a tagliare, et condur da altra parte lontana con dilatione, et spesa maggiore".

[53] Collegio, Relazioni, Canea, b. 83, n. 7 (277), Report by Daniele Gradenigo (1601), cc. nn. [c. 2r.] "Ho fatto piantar di ordine di detto eccellentissimo general una traversa, che cinge per far cinque volti".

intended to expand the shipyard, but also wished to "cover and defend the port at the eastern end", namely to prevent the sea from invading the port with debris. And it was for this reason that with the same rock of the first transverse he built a second one starting from the end of the one designed by Gonzaga and extending towards the tongue of land closing off the port to the north. In this way, the port was both freed "from the mortal damage that the sea was doing to it with its deposits" and, on the other hand, between the two traverses, the space for the new arsenal *volti* was delimited,[54] as had been proposed by Leonardo Loredan some 50 years earlier.[55]

### The fortification of Chania

The construction yard of the fortress of Chania is certainly the work most closely linked to the expansion of the shipyards. Indeed, the chronological span under examination records numerous interventions carried out, fundamentally, to remedy the serious defects the bastioned fortification doomed to failure from its conception. Analysing all the construction events of the new sixteenth-century fortification would easily take up an entire volume, but, although the undertaking is now essential to update Giuseppe Gerola's 118-year-old theses – never once revised[56] –, here we will proceed by observing a few issues intended as hints for future research on the subject.

The interventions made between the 1570s and 1580s in the fortification of Chania can be summarised in two major necessities: firstly, to gain in altitude in order to overlook the heights located just outside the built-up area; and secondly, to keep the enemy as far away from the city walls as possible. These are the two broad categories within which the actions listed by Giulio Savorgnan and Sforza Pallavicino can be placed in the copy of a memoir kept at the Archivio di Stato di Venezia, dated one day after the victory of the Christian fleet at Lepanto.[57] The two military chiefs converted the aforementioned needs into various measures to be carried out urgently: to build a number of *cavalieri* in the gullies of the various bastions and to extend the existing ones; to deepen the excavation in the moat "until stone or water is found"; to level off the heights of land to the south-east forming the Misericordia mountain between the Santa Lucia bastion and the platform; and to demolish the castles near the sea, in particular, Mirabello, Gerapetra and Scythia.

These were possible solutions, therefore, to flaws having their origin in the almost complete juxtaposition of the layout conceived by Michele Sanmicheli to the 14th-century walls.[58] If the replication of a medieval layout does not constitute a *unicum*, as the sixteenth-century interventions in Padua and Verona demonstrate, in the case of Chania it proves to be the root of all the shortcomings. Unfortunately,

[54] Spanakes, *Μνημέια*... op. cit., IV, pp. 31-33 "però è stato necessario per serrargli quella entrata tirrar un'altra traversa su'l medesimo scoglio in faccia di tramontana intestata nella prima col capo di ver ponente, et nel gomito del braccio esteriore del molo che cinge il porto, con quello di verso levante in parte che havendosi lasciato un poco di fianco vi si ha piantato una piazzetta, che fornita che sia la scortinerà et difenderà. Con la qual provisione si sono conseguiti due beneficij grandissimi ad un tempo, l'uno è stato la liberatione del porto dal danno mortale che gli faceva il mare con le sue depositioni [...] l'altro beneficio è stato l'avanzo che si è fatto di un squero o terreno vacuo tra ambe esse due traverse, et l'una fronte del belloardo Michiele capace per la sua spaciosità di cinque volti di arsenali [...] l'altra la traversa opposita a questa".

[55] Collegio, Relazioni, Canea, b. 83, n. 1 (271), Report by Leonardo Loredan (1554), cc. nn. [c. 4v.] "si potrà et al bastion del scoglio alla Sabbionara trovar commodità di farne altri n° sei [volti]".

[56] On the fortification of Chania, see Gerola I.1, pp. 154-169 e I.II, pp. 414-472; in the wake of Gerola's observations, see E. Langenskiold, *Michele Sanmicheli, the architect of Verona: his life and works*, Uppsala 1938, p. 162; L. Puppi, *Michele Sanmicheli architetto di Verona*, Venezia 1971, p. 77 and ff.; P. Davies and D. Hemsoll, *Michele Sanmicheli*, Milano 2004, pp. 42 and 367; M. Andrianakis, "Οι οχυρώσεις των Χανίων παρελθόν, παρόν και μέλλον." *Έρεισμα*, vol. 38-39, 2006, pp. 14-33, in particular, pp. 27-28; M. Andrianakis, *Το έργο των Επιστημονικών Επιτροπών Αναστήλωσης, Συντήρησης και Ανάδειξης Μνημείων*, Athens 2006, pp. 475-490; I. Steriotou, "Le fortezze del Regno di Candia..., op. cit.

[57] Capi da guerra, b. 8, "Giulio Savorgnan", writing with the title: "Nell'isola di Candia s'hanno da fare le infrascripte cose" (Venice, 8 October 1571); a similar memoir, but of 5 October, is quoted by Gerola, see Gerola I.2, pp. 428-429.

[58] Of diverse opinion is Gerola I.2, p. 415: "ben misere ed insufficienti saranno state le antecedenti opere di difesa, dacchè il grande architetto veronese [Michele Sanmicheli] non potè servirsene in alcuna guisa, ma fu costretto a disegnare una nuova pianta della fortezza, in tutto dissimile dalle precedenti opere fortificatorie"; and Steriotou, "Le fortezze del Regno di Candia...", op. cit., p. 292 "Michele Sanmicheli non la tenne affatto in considerazione [la cinta trecentesca] nel disegno delle nuove fortificazioni di Canea proposto nel 1538".



10.
Colonnello Solari, "Piano della piazza di Canea con l'assedio giusto con la linea di contravalatione et attacchi il tutto della direzione del Illustrissimo et Eccellentissimo Signore Conte di Stramendol Generale di sbarco e diretto gli attacchi del Ingegnere Camucio l'ano 1692 S.N." Biblioteca Comunale di Treviso, Ms. 1155 tav. 21.

no trace remains of the medieval wall of Chania, begun between 1318 and 1325,[59] and its existence is only evidenced by the two maps already discussed regarding the rock of Lagonissi (figs. 5, 6).[60] Both maps trace an irregular five-sided layout with square towers and rectilinear stretches of wall protecting the settlements developing on the plain – i.e. outside the walls of the medieval castle – and enclosing the entire harbour basin. However, the walls were built at a lower height than the medieval castle, a circumstance that proved problematic in the new sixteenth-century layout as it allowed the surrounding hills outside the walls to be exploited by the enemy, who, without impediment, could reach an elevation equal to the city *cavalieri*. This is clearly observed in the seventeenth-century drawing of Chania depicting a Venetian offensive on the city (1692), by then under Ottoman control, once again preserved in the Biblioteca Comunale di Treviso (fig. 10).[61] In essence, the city's location made it vulnerable, especially in the event of a siege, and its layout was too dependent on a fortification conceived at a time when the new techniques of attack and defence (siege techniques), whose main tool was artillery, had not been developed. The *provveditore* Giacomo Foscarini's appraisal is then of little surprise: in the mid-1570s, he judged the city to be so imperfect that "whoever wished a more secure defence of the city would need to have it, both in form and site, all walled up and moved to another place",[62] a viewpoint that may still be traced in the last years of

[59] Gerola I.2, pp. 414 - 416. With the construction of this wall, along with the addition of other urban spaces such as a square and the original shipyards, Chania was transformed into a genuine city, E. Molteni, "Candia and Canea: the walls, the churches, the outer burghs", *The Greek World under Ottoman and Western domination, XV-XIX centuries*, New York-Athens, 2008, pp. 25-39, in particular, pp. 25-28.

[60] See note 46.

[61] Biblioteca Comunale di Treviso, ms. 1155, tav. 2, in *Fortezze veneziane dall'Adda all'Egeo*, op. cit., pp. 170-171.

[62] BNM, Ms. It. VII, 631 a (=7476), "Rellatione dell'eccellentissimo signor Giacomo Foscarini provveditore generale in Candia" (1575), fol. 2r. "chi volesse desiderar più sicura fortezza su quella città bisognarebbe che di forma et sito la fosse tutta murata et in altro luoco portata".

the century, when Annibale Gonzaga and the engineer Angelo degli Oddi noted that the solution to all of Chania's defects is to make "a new resolution of form",[63] namely reduce its dimensions "so that it might receive in part the benefit of the defences".[64]

It was, therefore, in this setting that from the time of the architect Sanmicheli, the construction of a fortress of four bastions too far apart went ahead, joined by long stretches of curtain wall that were frequently renewed, first with the building of a platform between the bastions of St. Lucia and Schiavo, and later of several *cavalieri* and firing positions that could, somehow, support the flanks of the different bastions. This layout, in certain aspects, may recall a number of projects for the fortifying of the city of Pesaro by Pier Francesco di Viterbo, a war technician in the circle of Francesco Maria della Rovere.[65]

Although the Veronese architect oversaw the first fortification works at Chania, the sources known to date do not describe what was actually completed during his stay. In this regard, however, it is safe to say that during his visit to the island he only had time to set up the first temporary earthworks, which later became permanent.[66] In fact, in a report on the fortifications of Vicenza, Sanmicheli wrote, with regard to fortification in *lotte* (i.e. earthworks), that "in Candia, where those people are not used to working on repairs, I made Retimo, Chania and Candia in a very short time".[67] Such statement opens up numerous issues regarding the work of the Veronese architect in Crete. Problems emerge not only from a military analysis (i.e., from the standpoint of the war fought) of Sanmicheli's military architecture – not only Cretan – but also from a re-reading of the sources, which, on the basis of all the subsequent modifications that the commanders made to the artefacts, testify to the defective character of the fortresses – Chania and Rethymnon *in primis* – implemented by Sanmicheli and his circle and then continued by different hands. These are, in short, elements that lead to the thought that Michele Sanmicheli's work – and that of his nephew Gian Girolamo – as a military architect must be entirely reassessed, starting from the question that Camillo Semenzato asked in 1960: "Was he [Michele Sanmicheli] a military engineer who occasionally devoted himself to civil architecture or was he a great civil architect forced by necessity to deal with military architecture?"[68] In the future, it would be useful to take up "the very fierce dismissal", albeit 'highly fertile', with which Manfredo Tafuri defines Ennio Concina's analysis of Sanmicheli's military works, already outlining the thinking that the Veronese architect should be considered a military builder rather than a true architect skilled in the art of war.[69]

[63] Collegio, Relazioni, b. 81, Report by Annibale Gonzaga, "Relatione del Regno di Candia del signor Annibal Gonzaga con un raccordo di aggionger difese alla fortezza della Canea co'l dissegno" (1599, presented in Collegio 11 December 1599; the note, attached to the report, has the following title: "Ricordo di quello che si potrebbe fare in tempo di guerra per aggionger difese alla fortificatione della Canea"), fol. 17r.

[64] BNM, Ms. It. VIII, 1523 (=8682), Report by the engineer Angelo degli Oddi to the *provveditore generale* Benedetto Moro, fol. 787r. "in modo che se ne potesse ricevere in parte il benefitio della diffesa"; some passages in this report are almost identical to the Gonzaga report cited in the previous footnote.

[65] Biblioteca Apostolica Vaticana, codice Barb. Lat. 4391, pt.B., 9r. Pianta di "Pesero". Thanks to Elisabetta Molteni for this information and discussion thereof. On Pier Francesco da Viterbo, see *Pier Francesco da Viterbo e l'architettura militare italiana del primo cinquecento*, (ed. by G. Villa), Roma 2009.

[66] G. Mazzi, "Sul ruolo di Sanmicheli nei cantieri delle difese", *Michele Sanmicheli: architettura, linguaggio e cultura artistica nel Cinquecento* (ed. by H. Burns, C. L. Frommel, L. Puppi), Milano 1995, p. 205.

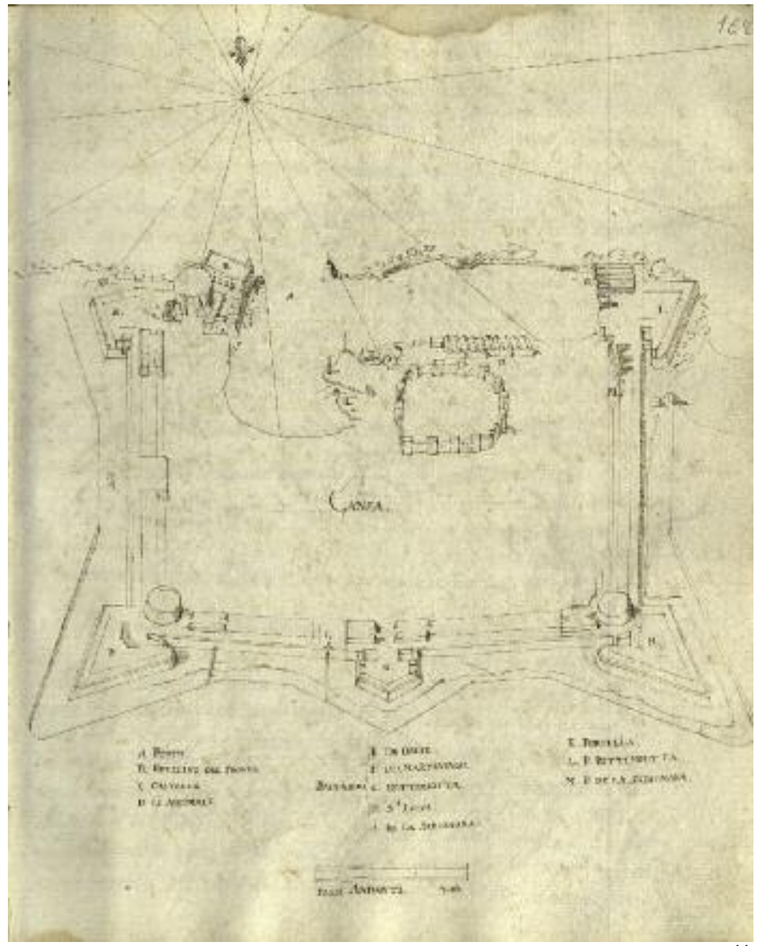
[67] Concina, *La macchina territoriale...*, op. cit., p. 133, "in Candia, dove non sono usi quelli omini a lavorar repari, feci Retimo, la Cania e Candia in pochissimo tempo"; an interesting chapter on earth fortification in Michele Sanmicheli's architecture, with some considerations worthy of review, can be found in F. Toso, *Michele Sanmicheli "inzegnero" tra progetto e cantiere: cultura tecnica e figure intermedie nei cantieri veneti della prima meta del '500*, Degree thesis, supervisor: Nullo Pirazzoli; assistant supervisor: Pasquale Ventrice, academic year 1997/1998.

[68] C. Semenzato, "Michele Sanmicheli architetto militare", *Michele Sanmicheli. Studi raccolti dall'Accademia di Agricoltura, scienze e lettere di Verona per la celebrazione del IV centurió della morte,* Verona 1960, pp. 77-93, in particular, p. 77, "fu [Michele Sanmicheli] un ingegnere militare saltuariamente dedicatosi all'architettura civile o fu un grande architetto civile costretto da necessità contingenti ad occuparsi di architettura militare?".

[69] M. Tafuri, "Sanmicheli: problemi aperti", *Michele Sanmicheli: architettura...* op. cit., pp. 228-234, in particular, p. 234; Concina, *La macchina territoriale...*, op. cit.; E. Concina, ""Munire et ornare": Sanmicheli e le porte di Verona", *Michele Sanmicheli: architettura...* op. cit., pp. 196-203.



11.
*Canea*, in *Descrizione dell'isola di Candia*, Δημοτική Βιβλιοθήκη Χανίων, 914.959 XH A1, fol. 16r.

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### The excavation of the moat

As noted, the work on the fortification of Chania from the 1570s onwards focused on the construction of both *cavalieri* and embankments (*terrapieni*), operations that, however, depended on another, much more problematic building site: the digging of the moat. The Chania moat, it may be said, has its own very complex history, which begins at least in 1502 – thus, still with the fourteenth-century walls standing – when Marin Sanudo summarises the demands of the *provveditore* Nicolò Coppo, writing that "the moat must be dug out of the ground, and 150 people a day are required to work on it".[70] Serious difficulties arose during the stay of Leonardo Loredan (1554), who noted in his report that the moat between the Schiavo bastion and Gritti was so "poorly excavated that the bastions cannot be flanked and defended because of it".[71] Nonetheless, the *provveditore* did not carry out the excavation of this area, choosing to continue, in various stages, the digging of the area

[70] *I diarii di Marino Sanuto...*, IV, col. 866 "bisogna cavar il fosso a la terra, et vi fa lavorar da 150 homeni al zorno".

[71] Collegio, Relazioni, Canea, b. 83, n. 1 (271), Report by Leonardo Loredan (1554), cc. nn. [c. 4r.] "[fossa] poco cavata onde per causa di quella li bastioni non si puono fiancheggiar et diffender".

12

13

14

12.
Chania, moat of the city towards the Gritti bastion. Photo by author (22/10/2021).

13, 14.
Chania, the 'Cavalier Lando' in the gulley of the Schiavo bastion. Photo by author (22/10/2021).

between the Schiavo bastion and Sabbionera. The problem on the western front (Schiavo-Gritti bastions) was initially tackled around 1568 by Luca Michiel, who mentions the possible re-use of the "large quantity of stones, which are quarried in those ditches" in the building site of the new shipyards, when the city still had three *volti*.[72] But above all, the same area was excavated by the rector Bernardino Lippomano (1572), who was so troubled by the difficulty of the operation that he had to entrust its undertaking to the "miners [...] for being for the most part all of stone" (fig. 11).[73]

In this context, it can be deduced – in the same way as for the port maintenance – that the work in the moat and, consequently, in the fortification of Chania was highly varied and carried out without any uniform standard. This situation is reflected in the words of Marin di Cavalli, who in 1571 found the "moat to be very imperfectly hollowed out and not even half of it defended from the sides due to the different opinions of those who at various times planned it".[74] It is therefore of little surprise that the *provveditori*, aware of the long duration of the work and, certainly, of the city's unsolvable defects, would take the workforce away from the fortification to employ it in other tasks. This is what Luca Michiel laments in 1577, when he notes that he found the fortress "in the state I left it three years ago when I departed from this kingdom", because the *provveditore* Giacomo Foscarini employed some of the men who had been assigned to dig the moat to work on the arrangement of the salt pans and the construction of the embankments of Souda.[75] Likewise in 1583, at the height of the arsenal construction season, the governor of Chania Raffaello Rasponi wrote about the lack of men for the excavation, complaining that "working at the shipyards where [men] are employed, little benefit is to be had".[76]

For the excavation of the moat, and likewise for the expansion of the shipyards, the key figure was rector Pietro Lando.[77] Aware of the interconnection between the moat and the fortification, he increased the excavation so that during his rectorate he could "have some *cavalieri* made with the earth excavated from the moat and have some other places embanked".[78] The efficiency of Lando's administration enabled Sforza Pallavicino to lay the foundations of "three *cavalieri*, one at the Schiavo bastion and the other two at the platform which are now at the level of the embankments",[79] configuring a layout of the fortification very close to that shown in the seventeenth century plan of the city kept in the Municipal Library of Chania (fig. 12). Indeed, among the completed works was the *cavaliere* – still extant today but certainly much reworked (fig. 13 and 14) – in the gully of the Schiavo bastion, named after the rector (as can be seen on some maps) and later expanded by the rector Giandomenico Cicogna and Alvise Grimani.[80] Cicogna, however, more focused on increasing the shipyards up to 15 *volti*, worked largely on the moat surrounding the

[72] Senato, Mar, filze, 39 "quantità grande di pietre, le quali si cavano in quelle fosse".
[73] Collegio, Relazioni, Canea, b. 83, n. 3 (273), Report by Bernardino Lippomano (1572; presented 24 April 1573), cc. nn. [c. 1v.] "spezzamonti [...] per esser la maggior parte tutto sasso".
[74] PTM, b. 501, f. 730 (despatch of 20 March 1571, *provveditore generale* Marin di Cavalli)
[75] PTM, b. 507, f. 741 (despatch of 20 November 1577, *provveditore generale* Luca Michiel)
[76] PTM, b. 510, f. 748 (record entitled: "Informatione della fossa della Canea al clarissimo signor Giovanni Dominico Cicogna dignissimo rettor", 31 July 1583, governor of Canea Raffaello Rasponi; attached to the despatch of 31 July 1583 by Giandomenico Cicogna) "Vi sono le angarie che potriano portar qualche aggiuto a questa escavatione ma lavorandosi alli arsenali dove sono adoperati puoco benefitio se ne potrà havere".
[77] A few years after his rectorate, his administration would be praised by the captain of Candia Geronimo Barbarigo: "il clarissimo Piero Lando intorno questi volti et sui coperti et nella fortificatione della città ancora ha fatto molte operationi importantissime per sicurtà di esse et per il vero ho veduto cavallieri, escavation di fossa, magazen, cisterne, torrete da polvere et molte altre cose fatte in suo tempo che non nomino che è cosa grande" (the most distinguished Piero Lando on these *volti* and on the roofs and in the fortification of the city has carried out many very important operations for their safety and I have actually seen horses, excavation of moats, workshops, cisterns, gun powder towers and many other things done in his time that I will not mention, which is a remarkable thing), see PTM, b. 510, f. 748 (despatch of 4 April 1583, Captain Geronimo Barbarigo).
[78] PTM, b. 508, f. 743 (despatch of 28 February 1579 [m.v = 1580], rector Pietro Lando) "far fare alcuni cavallieri i quali si fanno con i terreni che si cavano da detta fossa et a far terrapienare alcuni altri luoghi".
[79] PTM, b. 509, f. 746 (despatch of 24 December 1581, count Giovanni Maria Martinengo) "tre cavalleri, uno al baloardo Schiavo et gl'altri dui alla piattaforma quale sono hora alli sino al piano delli terrapieni".
[80] PTM, b. 510, f. 748 (despatch of 16 August 1583, rector Giandomenico Cicogna) "si lavora alle fosse, et porta il terreno sopra il cavallier Lando et altri luoghi".

Retimiotta gate, noting in his 1586 report that it "is not hollowed out as wide as the rest around the city".[81] This was unceasing work, in conclusion, that lasted even up to the days before the Ottoman siege in 1645, on which future studies should be directed.

## Conclusions

From the above account, we may conclude that the shock of the loss of Famagusta – mitigated by the victory at Lepanto – and then of the whole island of Cyprus, convinced the *Serenissima* to set up a new defensive strategy that could cope with future similar offensives on the island of Crete. It was a dramatic moment, an apprising of experiences in which the Republic needed to gain self-assurance: confidence, in short, which it sought to regain by placing the fleet at the centre of its protection of Candia, namely the means on which communication with the *Stato da Mar*, the economy of the lagoon capital and even the very existence of the *Serenissima* were founded. The interweave, therefore, between the updating of the fortifications – those that had proved fundamental at the beginning of the century – and the expansion of the shipyards became fundamental in rethinking the design of the defence beyond the sea, which in Chania saw one of its first implementations.

It was therefore decided, with a certain naivety, that Venice's objective should focus on "being able to be protector of the ports", namely capable of maintaining control of all the ports and beaches, avoiding, in advance, a possible enemy landing on the island, an objective that the various inspections by *provveditori* and military experts soon recognised as unattainable. The alternative then was human resources, in particular the garrison of 50,000 soldiers that Luca Michiel believes to be "the real nerve, the real pulse, and the real strength of the Kingdom of Candia. And these alone must be thought of and provided for" but, as the *provveditore* mentioned, not even those were well paid, risking siding with the enemy.[82]

Those in charge of defence in the field – the *condottieri* and *provveditori* – therefore faced the seventeenth century with pessimism and resignation, the far-reaching sentiments that emerge in the sincere speech that Annibale Gonzaga addressed to the Doge where he exposes the endless number of places favourable to enemy landings, highlighting the complexity of the problem. Not even the topography of the island could be relied upon, which might hinder the movement of men and artillery because "if the French had managed to carry so much artillery into Italy over rugged mountains, they could also carry it from one end of the island to the other". These declarations by Gonzaga were summed up in a short and direct statement: "The island is very large, the forces of the enemy [the Ottoman Empire] will be very great, the beaches many, the *cernide* [territorial armies] not very good, the militia paid little. Your Serenity will be now able to draw his own conclusion".[83] The conclusion is that should the Ottoman Empire decide to take the Kingdom of Candia, sooner or later it would.

[81] Collegio Relazioni, Canea, b. 83, n. 4, (274), Relazione di Giandomenico Cicogna (1586), cc. nn. [c. 1v.]
[82] Collegio Relazioni, b. 78, Report by Luca Michiel (1580) c. 317r. "il vero nervo, il vero polso, et la vera forza del Regno di Candia. Et a questi soli è necessario pensare et provedere".
[83] Collegio, Relazioni, b. 81, Report by Annibale Gonzaga, 1599 (presented in Collegio 11 December 1599), "Relatione del Regno di Candia del signor Annibal Gonzaga con un raccordo di aggionger difese alla fortezza della Canea co'l dissegno", fol. 5r. "se li francesi condussero tanta quantità d'artiglieria in Italia per monti asprissimi, anche questi potriano condurla da un capo all'altro di detta isola [...] l'isola è molto grande, le forze dell'inimico [l'Impero Ottomano] saranno grandissime, le spiaggie molte, le cernide poco buone, la militia pagata poca. Hora Vostra Serenità potrà far da se la conclusione".



## Appendix I

ASVe, Senato, dispacci, Provveditori da terra e da mar e altre cariche, b. 501, f. 730 (1571), Relazione del capitano Leon Remusati da Pesaro (dispaccio del 23 aprile 1571, inserito nel dispaccio di Luca Michiel del 25 aprile 1571).

[c. 1r.] In lettera della Canea di 25 april 1571
Clarissimo Signor Proveditor

Essendo andato di ordine di Vostra Signoria clarissima a riveder li siti et porti dove potesse sbarcar un'armata nemica et dove si potria condure qualche banda di gente per vietar all'inimico che non possi sbarcare ho veduto quanto è scritto qui di sotto. Partitomi de qui cavalcai alla volta di Santo Honufrio luoco lontano de qui quattro miglia in circa et ho veduto un porticello addimandato porto Honufrio nel qual vi potriano star 12 o 15 galee in circa et è coperto da ostro et garbino et da sirocco levante et quel sito è tutto sassoso et vicino a ditto porto vi sono dui pozzi d'acqua però salata. Piu oltre a San Nicolò furnoschisma [sic] lontano dal sudetto luoco dui miglia in circa vi è un porticello capace di sei galee in circa et li vicino è un pozzo di acqua grossa et il detto porto è coperto da ogni vento eccetto che da ostro et garbino et è circondato da luochi sassosi. Doi miglia piu in là a Santa Croce vi è un porto piccolo capace di otto galee in circa coperto da ostro et garbino et li vicino vi sono dui pozzi quel più appresso alla marina è di acqua buona et il più lontano è salmastro et questo sito è spiaggia et vicino alla spiaggia vi è la campagna dove con bonazza si potria sbarcare non solamente fanteria ma anco cavalleria et li vicino non è luoco di poter offender l'inimico salvoche con molta quantità di gente. Piu oltra alla volta de cisternes lontano cinque o sei miglia da questo luoco vi è una spiaggia addimandata Marati vicina alla Suda la quale è commoda per il buon sorzidor ch'è quivi di stare una grossa armata et ha vicino dui pozzi d'acqua grossa et appresso la spiaggia vi è una campagna di cinque o sei miglia et passata questa vi sono luochi alti et sassosi in questo luoco seria quasi impossibile vietare all'inimico il poter sbarcare, è ben vero che nel venire poi verso la città per la fortezza de siti se gli potria dare molto travaglio et anco del danno tanto piu non potendovi condur l'artiglieria ne manco puo prevalersi della cavalleria per l'asprezza delli luochi. [c. 1v.] Appresso detta spiaggia anzi attaccata a essa vi è un porto detto Lutrachi capace di cinquanta galere in circa coperto da ponente et da garbino qui vicino vi è un pozzo d'acqua grossa qual porto confina con la ponta chiamata Calogero la qual è principio del porto della Suda et cavalcando per la costa della Suda dalla parte dell'Acrotiri lontano forse mezo miglio da detta ponta vi sono tre monasteri poco distanti l'uno dall'altro, il primo s'addimanda Santa Maria Schinochiefali, il secondo Santa Herine et il terzo Santo Georgio et forse mezo miglio lontano dalli tre vi è un'altro chiamato Santo Antonio con comodità di buone case ne quali quattro luochi per la comodità delle acque et coperto vi potriano alloggiar mille fanti i quali seriano per la difesa della spiaggia et del porto et alla ponta del calogero quattro miglia piu verso la culata per detta costiera vi è un luoco detto Spalatea dove si potria accampar mille fanti ancora per la comodità di acque, d'alcune case et arbori et un miglio più adentro vi è una villa detta Arostini (?) et questi mille fanti potriano in occassione soccorrer li primi non essendo da quel luoco a questo oltra comodità per l'inimico di poter sbarcare salvo che la fanteria et quella anco con molta difficultà et quando anco tutti li doimille fanti insieme non potessero resister per qualche causa all'impeto di nemici hanno la retirata con grande avantaggio loro et incommodo dell'inimici non solamente a detto secondo corpo di fanti ma anco fino alla culata del qual luoco piu commodo all'inimico per sbarcar fanteria, cavalleria et artiglieria non ve n'è alcuno per esser tutta spiaggia et vi seria bisogno d'un grossissimo numero di gente volendo vietare et anco se vi fusse molta gente non si potria però impedire ma se gli darebbe di molti travagli et danni. Et dalla parte della cicallaria cominciando dalla culata per dui miglia in circa vi è un loco commodissimo medesimamente per sbarcare fanteria, cavalleria et artiglieria, questo luoco commodo finisse ad una ponta [c. 2r.] addimandata Paglia Cicallaria appresso alla qual ponta vi è la chiesa di Santa Veneranda dove per la commodità delle acque coperto et ombra si puo accampar mille fanti per difesa de ditto luoco et dalla detta ponta sino all'altra di San Giovanni per tutta quella costa vi sono luochi forti dove impossibile cosa seria a poter sbarcar cavallaria ne artiglieria. Vi è poi la spiaggia della Bicorna dove facilmente si potria sbarcar cavallaria et artiglieria ma a modo alcuno non si potria condur alla città essa artiglieria per rispetto delle strade cattive et dalla Bicorna in la non vi è luoco comodo per poter sbarcar detta artegliaria ovvero cavalleria et alle Calives? ch'è una villa appresso detta spiaggia di qua della Bicorna si potriano accampare mille fanti per difesa di quel luoco in quali non potendo resister a qualch'impeto de nemici hanno anco la retirata facile fino alla culata che non potriano esser offesi. Di tutti li luochi c'ho veduto non vi è per mio giudizio il più commodo all'inimico della culata fin alla ponta detta Paglia Cicallaria che puo esser di forse quattro miglia in circa per il sbarcar la fanteria, cavalleria et anco l'artiglieria.

Della Canea alli 23 aprile 1571
Di Vostra Signoria Clarissima obligatissimo servitor Leon Remusati da Pesaro

ΤΟ ΒΙΒΛΙΟ

# ΝΕΩΡΙΑ ΧΑΝΙΩΝ

## THE VENETIAN SHIPYARDS OF CHANIA

ΜΕ ΤΗΝ ΕΠΙΜΕΛΕΙΑ ΤΩΝ

ΝΙΚΟΥ ΣΚΟΥΤΕΛΗ ΚΑΙ ELISABETTA MOLTENI

ΕΚΔΟΘΗΚΕ ΣΤΟ ΠΛΑΙΣΙΟ

ΤΗΣ ΠΡΟΓΡΑΜΜΑΤΙΚΗΣ ΣΥΜΒΑΣΗΣ ΠΟΛΙΤΙΣΜΙΚΗΣ ΑΝΑΠΤΥΞΗΣ

ΓΙΑ ΤΗΝ ΕΚΠΟΝΗΣΗ ΤΟΥ ΕΡΕΥΝΗΤΙΚΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ ΜΕ ΤΙΤΛΟ:

ΕΡΓΑΣΙΕΣ ΓΙΑ ΤΗΝ ΙΣΤΟΡΙΚΗ ΚΑΙ ΤΕΧΝΟΛΟΓΙΚΗ ΤΕΚΜΗΡΙΩΣΗ

ΤΗΣ ΜΕΛΕΤΗΣ ΩΡΙΜΑΝΣΗΣ ΤΩΝ ΕΡΓΩΝ ΑΠΟΚΑΤΑΣΤΑΣΗΣ

- ΑΠΟΔΟΣΗΣ ΧΡΗΣΕΩΝ - ΑΝΑΔΕΙΞΗΣ ΤΩΝ ΝΕΩΡΙΩΝ ΣΤΑ ΧΑΝΙΑ

ΣΕΛΙΔΟΠΟΙΗΘΗΚΕ - ΤΥΠΩΘΗΚΕ ΚΑΙ ΒΙΒΛΙΟΔΕΤΗΘΗΚΕ

ΣΤΗΝ ΤΥΠΟΚΡΕΤΑ Α.Ε.

ΤΟΝ ΙΟΥΛΙΟ ΤΟΥ 2023 ΣΕ 1.000 ΑΝΤΙΤΥΠΑ ΕΚΤΟΣ ΕΜΠΟΡΙΟΥ

ΓΙΑ ΛΟΓΑΡΙΑΣΜΟ ΤΟΥ ΠΟΛΥΤΕΧΝΕΙΟΥ ΚΡΗΤΗΣ


ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΠΕΡΙΦΕΡΕΙΑ ΚΡΗΤΗΣ