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Revisiting the French manuscript maps (1685-1687) of the Cycladic Archipelago: georeference and best fitting

Keywords: Ing. Raseau, Ing. Pétré, Aegean Archipelago, Cyclades, 17th century insular maps, manuscript maps, coastline comparison, cartographic heritage

Summary: The rare large dimension manuscript maps, representing a number of islands of the central Cycladic archipelago in the Aegean Sea, was found in the *Tricoglou Library*, a part of the Aristotle University of Thessaloniki Central Library in 2016. The maps (Livieratos et al, 2016; Livieratos & Boutoura, 2017), collected in a volume called *Recueil Raseau*, made after the orders of Louis XIV of France in the period between 1685-1687 by the engineer Raseau, are considered as exceptional example of military medium-to-large scale mapping, in the context of the French naval mapmaking of the last quarter of seventeenth century. Another set of maps made at the same period by the engineer Pétré, representing the northern part of the Cycladic archipelago, are kept in the *Service historique de la Défense* in Vincennes, under the name *Recueil Pétré*, completes the mapping of the Archipelago, part of a major project for the mapping of the Dardanelles, the Aegean Sea and the East Mediterranean. The two *Recueils* are put for the first time together in a map exhibition in Thessaloniki, Greece on February and March 2018 (Livieratos, 2018) allowing the combined study of both sets. In this paper, the geometric consistency of the two map sets are analysed after the relevant georeference, showing important differences in the representation of the insular complex and the coastlines.

Introduction

The important *Recueil des Cartes de Partie des Isles de l'Archipel levées sur les lieux par Sieur Raseau Ingénieur ordinaire du Roi*, in short *Recueil Raseau*, a collection of large format French manuscript maps of the Cycladic Archipelago in the Aegean Sea made in 1685-1687, kept in the Tricoglou Library of the Aristotle University of Thessaloniki (AUTH) Central Library, presented recently by Livieratos et al (2016) and Livieratos & Boutoura (2017) and a second map set, complementary to *Recueil Raseau*, the equally important *Recueil des Cartes de Partie des Isles de l'Archipel levées sur les lieux par Sieur Pétré Ingénieur du Roi*, in short *Recueil Pétré*, kept in the Service historique de la Défense (SHD) in Vincennes, Paris, were jointly exhibited to the public in February – March 2018 in Thessaloniki (Livieratos, 2018). The putting together of the two *Recueils* of the Aegean Archipelago gave the possibility to study comparatively the two sets of insular cartography as far as the coastline representation is concerned under georeference.

The maps of the two *Recueils* are part of the broader project ordered by Colbert in the late '70s of the eighteenth century for the mapping of the coasts of Mediterranean, starting from the Mediterranean coasts of France and proceeding to the coasts of West and Central Mediterranean. Later on, in the '80s of the century, under Seignelay, Colbert's son, the mapping project of the coasts was expanded in the entire East Mediterranean including the Aegean Sea (Archipelago) up to the Dardanelles in the histor-

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ical and geopolitical context of the old French interest in that area and in view of the uncertain outcome of the long Große Türkenkrieg (1683-1699) and the Venetian–Ottoman conflict in Peloponnese.¹ These maps, as well as the maps of the years before, are collected in a number of *Recueils*, each referred to the geographical area surveyed during the French campaigns of coastal mapping in the Central and East Mediterranean, carrying the name of the head engineer-cartographer, who was in command of the field work, together with the naval officer responsible for the navigation.

The maps, the plans and the views from the sea of the missions, carried out in that period of time, are kept in the *Recueils* of SHD, Vincennes. The *Recueils* of maps representing the West and Central Mediterranean coasts are under the catalogue titles: a) Catalonia and the Balearic Islands: *Recueil des cartes et plans des costes de Catalogne et des isles de Majorque, Minorque et Yvice avec les plans particuliers des places de ces isles, veues, ports et mouillages pris sur les lieux par les S.r Pene Ingenieur Ordinaire du Roy, 1680*; b) Tyrrhenian coasts and islands with Corsica and Sardinia: *Recueil des cartes, plans, veues, reconnaissances, et memoire des costes d'Italie et des isles d'Elbe, Corse, et Sardaigne, 1679*; c) other Italian coasts: *Recueil des cartes, plans, reconnaissances et veues de partie des costes d'Italie levez sur le lieux par le S.r Petré Ingenieur Ordinaire du Roy, 1685*. In addition, there are also referenced *Recueils* of maps representing the south (north African) coasts of Mediterranean and those of Sicily.²

On the other hand, the *Recueils* of maps representing the East Mediterranean coasts are under the catalogue titles: a) Greek Archipelago (South Cyclades): *Recueil des cartes et plans de partie des isles de l'Archipel levez sur les lieux par le S.r Raseau Ingenieur ordinaire du Roy, 1685*.³ b) Greek Archipelago (North Cyclades): *Recueil des cartes et plans de partie des isles de l'Archipel levez sur les lieux par le S.r Petré Ingenieur du Roy, 1685*. c) Straits of Dardanelles, Tenedos Island, Cyprus, Alexandretta and part of the coasts of Levant: *Recueil des cartes et plans particuliers des Chasteaux des Dardanelles, de partie des isles de Tenedos et Cypre avec une partie des costes de Levant, scavoir de Seyde, Tripoly de Sirie, et Alexandrette levez par le S.r Plantier Ingenieur ordinaire du Roy, 1686*.⁴

In this paper, after a short review of the mapping of the Archipelago by the engineers Raseau and Pétré (Fig. 1; Fig. 2), we analyse the geometric consistency of the two sets of maps, collected in the corresponding *Recueils*, with respect to their georeference characteristics and their coastline spatial consistency.

¹ For more on the historical background see Livieratos et al., 2016 and Livieratos & Boutoura, 2017 and the relevant bibliography in both studies.

² For these *Recueils*, see, e.g. Guarducci, 2016.

³ This *Recueil* collecting insular maps of a part of the Greek Archipelago is kept in the Tricoglou Library by the Aristotle University of Thessaloniki Library & Information Centre.

⁴ Maps of the same mapping campaign (e.g. representations of Saint John of Acre and Alexandria, by Ing. Raseau) are also kept in BnF, Paris.

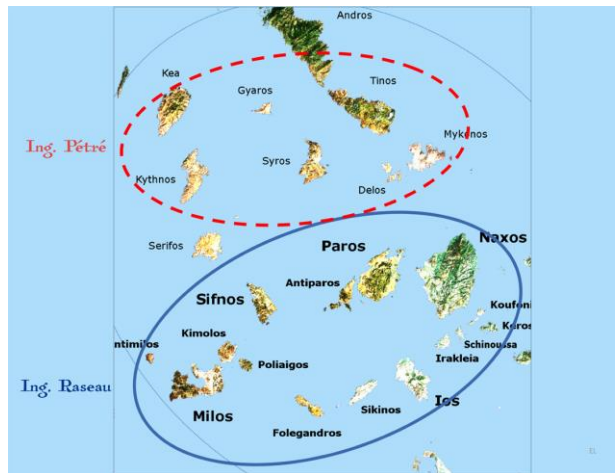


Figure 1: The insular complex of Cyclades in the Aegean Archipelago. It is shown the areas of the Raseau and Pétré mapping on a modern representation.

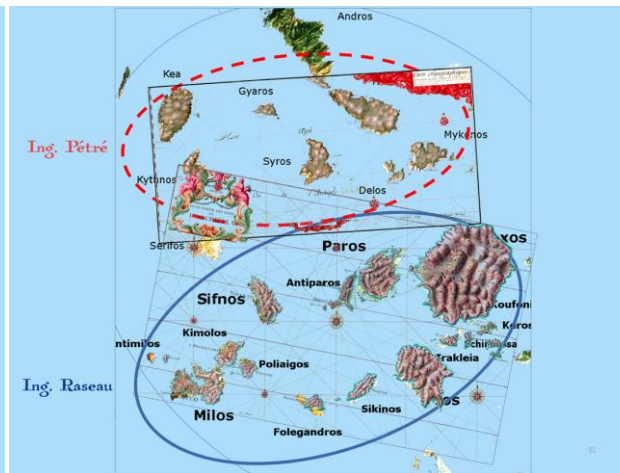


Figure 2: The insular complex of Cyclades in the Aegean Archipelago. It is shown the fitting of the Raseau and Pétré mapping on a modern representation.

The mapping of Archipelago by the *Ingénieurs du Roy* Raseau and Pétré

The *Ingénieurs du Roy* Raseau and Pétré are reported (Bellin, 1737) as selected experienced cartographers who mapped the Mediterranean coasts in many mapping campaigns, as it was also that of the Aegean Archipelago, in the period 1685-1687. Together with other known engineers, as e.g. Plantier, the brothers de Combes, du Méné and others, Raseau (written also Razaud) and Pétré took part in the group of engineers coordinated by Gravier d'Ortières (1687), who was responsible for keeping the orders of the proper execution of the mapping project in East Mediterranean (Livieratos et al., 2016, Livieratos, 2018).

Raseau is mentioned by Bellin in 1737 as a “source” cartographer of the Aegean Archipelago as was mentioned by Barbié du Bocage too, in 1799. He is referenced also as the earlier cartographer of Alexandria and of the gulf of Smyrna, in 1687, with maps of the same aesthetic value as those of the Cyclades made few years before.⁵ The maps of Cyclades made by Raseau are excellent examples of how was visualized the shaded relief in perspective at that time (Livieratos & Boutoura, 2017) as French cartography was strongly influenced by the *Classicism* of French painting (Bousquet-Bressolier, 1991).

Raseau was careful in the hydrographic survey of the insular sea environment and the representation of the bathymetry especially in the straight sea crossings, indicating also the best sited for the anchorages. In his maps, the geographical north is represented together with the magnetic counterpart with eleven degrees west declination with the exception of the sea area around Mylos Island, where the magnetic declination is nine degrees west, evidently due to the magnetic anomaly induced because of the influence of the strong local geothermal field (Livieratos & Boutoura, 2017).

From the study of the geometric accuracy of the coastline depictions, it is evident that this geometric cartographic element was not the main issue in Raseau's mapping. Instead, the thematic cartographic elements, both the physical and human, are carefully represented. The Raseau mapping of the part of Cyclades he carried out was mostly of thematic character taking good care of the hydrographic representation as well.

The second cartographer of the northern part of the Cycladic Archipelago, the engineer Pétré

⁵ For the aesthetic value of the maps of Cyclades, made by Ing. Raseau, see Livieratos & Boutoura, 2017.

(written also Petré) was mapping the west Italian coastline from Genoa southwards in 1679. In 1683, with Seigneley taking over the naval affairs of France, engineer Pétré contributed in the bombardment of Genoa from the sea and in 1685, he participated in the mapping of the coasts from Genoa to Toulon and from Barcelona to Gibraltar, with captain La Motte-Ayran onboard, in parallel time with the coastal mapping of Corsica and Sardinia made by Raseau, with captain Cogolin onboard. In the same year, both Raseau and Pétré, they sailed to the Aegean Sea for the mapping of Cyclades in two parts, the south and the north part respectively, as are represented in the two *Recueils* kept today in Thessaloniki and Vincennes.

As analysed by Livieratos (2018), the maps in the *Recueil Pétré* though belonging to the same mapping family with those in the *Recueil Raseau* are however morphologically different, even if they both follow (at least theoretically) the same orders given by Gravier d'Ortières, the head of the entire mapping campaign in East Mediterranean, physically present in parts of it. The maps in *Recueil Pétré*, less in number than the maps in the *Recueil Raseau*, are more stringently made in the terms of geometry, compared to the Raseau maps, but much inferior in the representation of the map relief, the shading and the overall aesthetics. Pétré is aware of this, calling thus his maps *topographic* in order to underline the focus on the geometric part of the mapping. The aesthetic superiority of the Raseau maps is definite when comparing the Cartouches on the maps with those in Raseau's real pieces of Art. A main difference between the two *Recueils* is the descriptive short texts in Pétré's accompanying the insular representations of the northern complex of Cyclades.

These descriptions about the physical and human thematic characteristics and resources of the islands, recalling the "isolarii", are synoptic of military intelligence type answering the orders given to the mission for the mapping of the East Mediterranean coasts in 1685-1687. Though the cartographic differences between the two *Recueils* of the thematic depictions are many and evident, including the representation of the terrain, the representation of the surrounding sea environment is quite similar concerning bathymetry, the positioning of the anchorages and the naming of places and the sea depth properties. Additionally, the *Recueil Pétré* loses the orientation to the magnetic north, represented in the *Recueil Raseau*, keeping only the geographic counterpart.

The geometric comparison of the two map sets

All the necessary cartographic information concerning the fundamental characteristics and properties of the Archipelago mapping represented in the two *Recueils* are already given in detail in the previous relevant publications (Livieratos et al., 2016; Livieratos & Boutoura, 2017; Livieratos, 2017). Here, we are limited to investigate the geometric properties of the insular sets representing the north and south parts of the Cycladic Archipelago, under georeference and (affine) best fitting to modern representations. Our intension is to evaluate the degree of similarity of the two mappings, with respect to the actual insular coastline shaping and to illustrate the geometric consistency of the mappings represented in the two *Recueils*. For this reason, we have used the general maps of the two Cycladic insular sets, the north given in the *Recueil Pétré* (Fig. 3) and the south given in the *Recueil Raseau* (Fig. 4).



Figure 3: The northern insular complex of Cyclades in the Aegean Archipelago, as represented in a general map of *Recueil Pêtré* kept in the *Service historique de la Défense*, Vincennes.



Figure 4: The southern insular complex of Cyclades in the Aegean Archipelago, as represented in a general map of *Recueil Raseau* kept in the *Tricoglou Library*, Library & Information Centre, Aristotle University of Thessaloniki.

The results of the comparative analysis are shown in the following images (using the modern toponymy to identify the islands), in which the georeference and the affine best fitting process are summarized, first in the general setting (Fig. 5) and then, in detail.

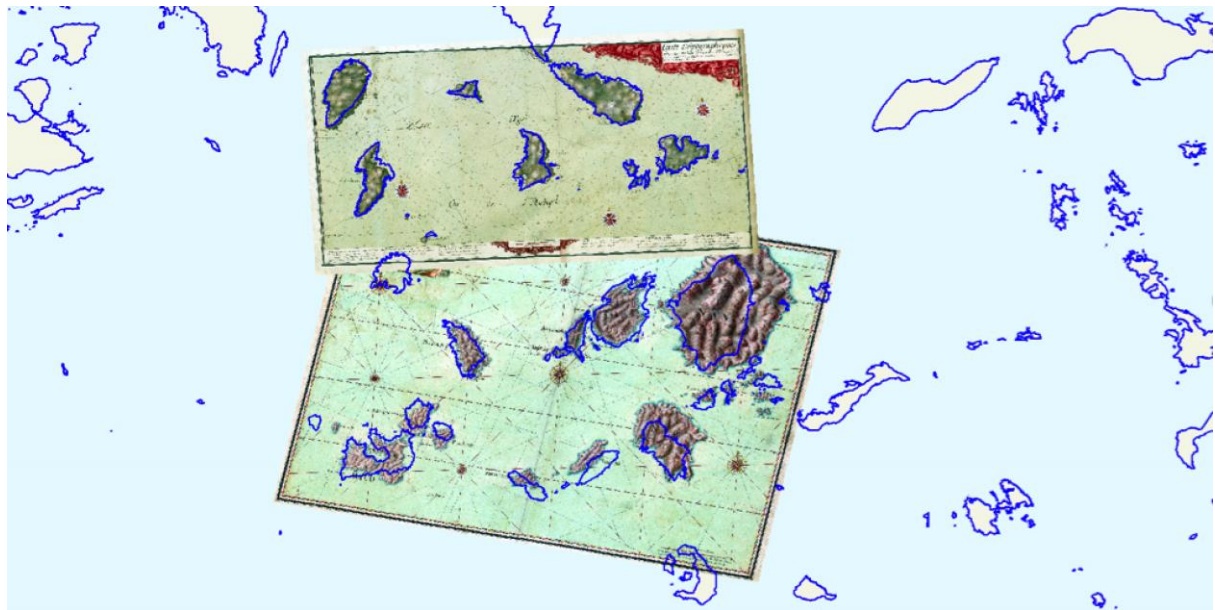


Figure 5: The georeference and the affine best fitting of the two sets.

The maps in Recueil Pétré

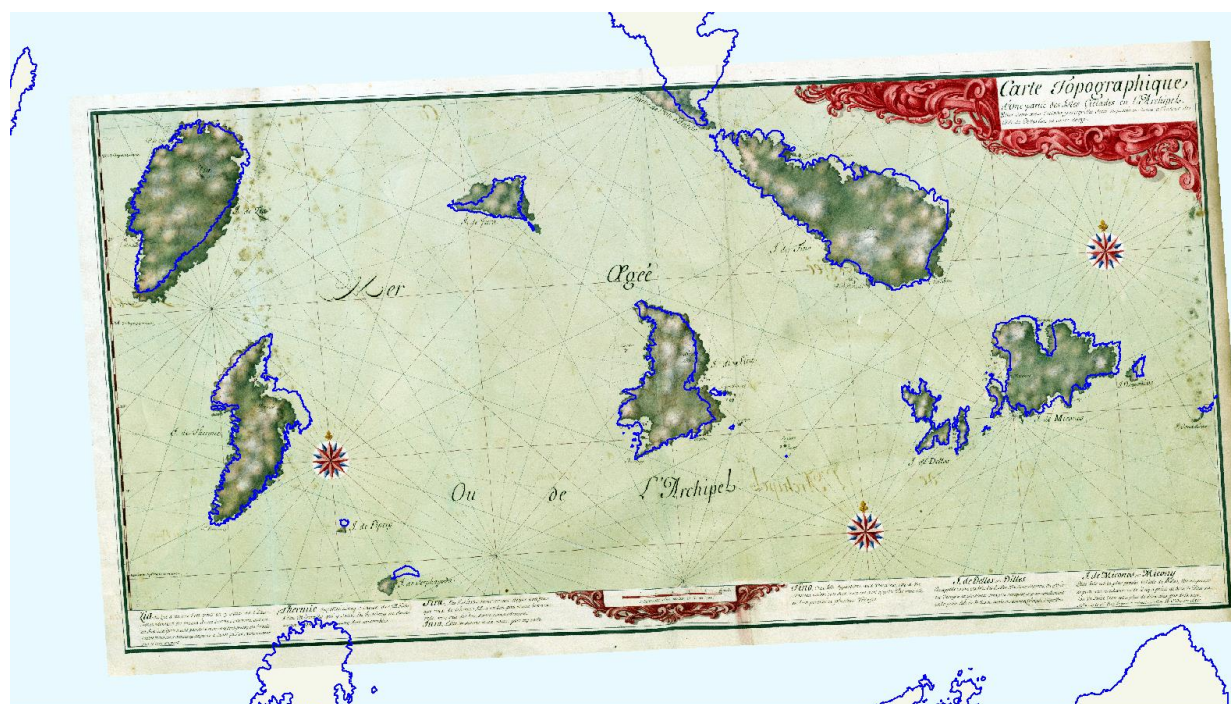


Figure 6: The georeference and the affine best fitting of the Pétré set.



Figure 7: Mykonos Isl.



Figure 8: Mykonos Isl.; the port

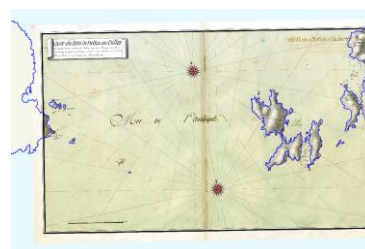


Figure 9: Delos Isl.



Figure 10: Delos Isl.; the port



Figure 11: Tinos Isl.



Figure 12: Tinos Isl.; the port



Figure 13: Syros Isl.

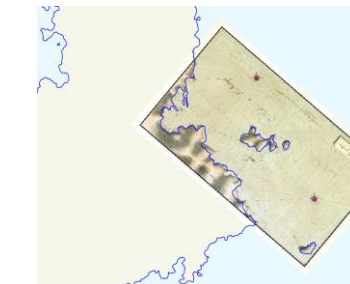


Figure 14: Syros Isl.; the port



Figure 15: Kythnos Isl.

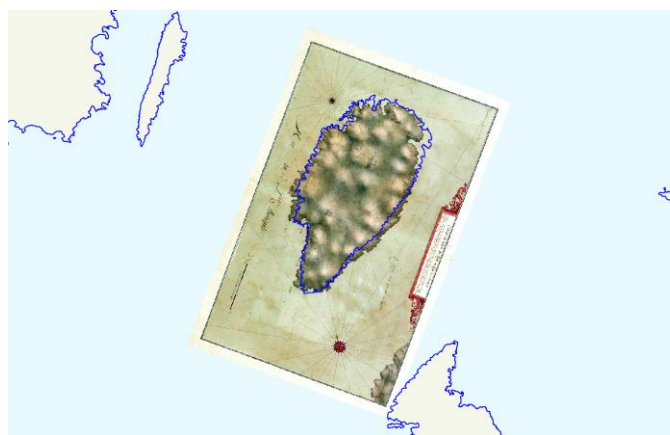


Figure 16: Kea/Tzia Isl.



Figure 17: Kea/Tzia Isl.; the port

The maps in Recueil Raseau



Figure 18: The georeference and the affine best fitting of the Raseau set.



Figure 19: Milos Isl.

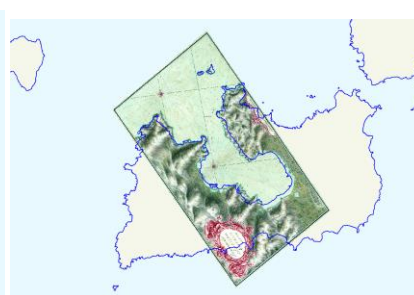


Figure 20: Milos Isl.; the port



Figure 21: Milos, Kimolos, Poliaigos Isl.



Figure 22: Sifnos Isl., Kipriani islet

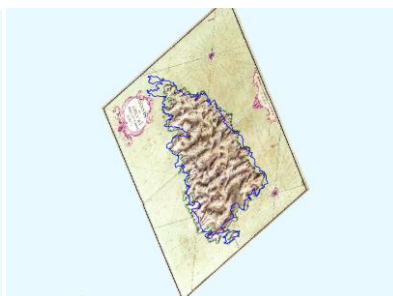


Figure 23: Sifnos Isl.

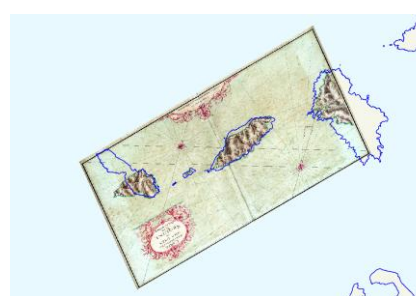


Figure 24: Folegandros, Sikinos Isl.



Figure 25: Ios, Iraklia, Schinoussa Isl.



Figure 26: Ios Isl.; the port



Figure 27: Paros, Antiparos, Despotikon Isl.



Figure 28: Paros Isl.

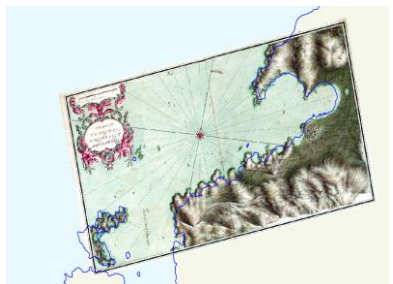


Figure 29: Paros Isl.; the port



Figure 30: Paros Isl.; the anchorage in Trio

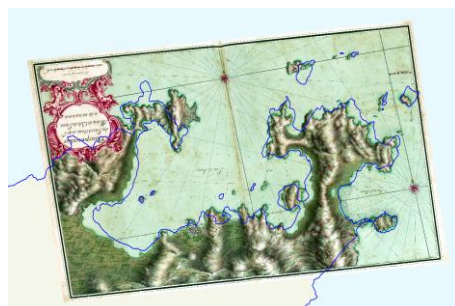


Figure 31: Paros Isl.; Naousa and Santa Maria ports



Figure 32: Kythira Isl.



Figure 33: Naxos Isl.

Conclusion

The georeference and best fitting in actual maps of the cartographic representations of Cyclades made by the French engineers Raseau and Pétré in 1685-1687 showed a relative geometric superiority of the maps of the *Recueil Pétré* compared to the Raseau counterpart, concerning the coastline depictions and the relative positions of the islands represented, especially in the general map collecting all the represented islands of the northern part of Cyclades. In the detailed maps repre-

senting enlarged parts of the coastline, the fitting remains generally better compared to the coastline depictions in the *Recueil Raseau*.

On the other hand, the general map collecting all the represented islands of the southern part of Cyclades, as depicted by Raseau,⁶ presents inconstancies in the relative positions of the islands and in the coastline mapping. The geometric consistency of the fitting is better in the detailed parts of the coastlines where in some cases the fitting is good as e.g. it is the case of the Paros and Antiparos Islands, the deep port of Mylos Island and other sites of apparent interest, as it is evident in the figures above. The definition of the maps in the *Recueil Pétré* as “topographic” (*Carte topographique*) is an indication of the special care these maps were made as far as the positional and coastline accuracy was concerned. The cost of this better geometric performance in the maps of *Recueil Pétré* seems to be the much poorer thematic depiction and aesthetic value of the map representations compared to the corresponding items in the *Recueil Raseau*, which are of superior quality. However, in both cases the hydrographic care is highly comparable in both sets of maps with the Raseau maps richer in depicting the orientation of the compass-north signing the important differentiation of the two degrees magnetic deviation in the sea area around Mylos Isl.

Using the available digital technologies facilitating the comparative analysis further investigations have to be done for a complete evaluation of the cartographic content of these exceptional *Recueils* of insular cartography from late eighteenth century.

Acknowledgement

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⁶ A rather draft copy of this general map by Raseau is kept in the BnF, Paris, identical to that of the *Recueil Raseau* as far as the positioning and the coastline representation are concerned but quite different in all other cartographic elements represented.

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