

The Order of St John
from Jerusalem to Malta
Some aspects and considerations

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“Vale of Tears”: An analysis of Piri Reis’ maps and descriptions of Malta and their relevance to the history of the Hospitaller Knights¹

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The aim of this study is to analyse some aspects of the work about the geography of the Mediterranean Sea of the famous Turkish admiral, Hadji Muhiddin Piri Ibn Hadji Mehmed, later known as Piri Reis. Piri Reis remained famous in history for two achievements. The first involves his two maps of the world. The second is the compilation of a portolan book entitled *Kitab-ı Bahriye*. His work *Kitab-ı Bahriye* (or ‘Book of the Seas’) has been the subject of a number of studies, which have raised more questions than they have answered. This is due to the conflicting information given by different authors on Piri Reis’ work and his diverse endeavours. In this paper I will be analysing some of the most important and relevant information published on this admiral’s work. However, this should be considered more as a work-in-progress paper than as a definitive study on the relevance of Piri Reis’ maps of Malta, both in the original manuscript as well as in contemporary or later manuscript copies of the aforementioned *Kitab-ı Bahriye* manuscript. Furthermore, this work will draw results from published works and electronic sources. Finally, it will also seek to tap new archival sources whose relevance to the study of Maltese history has never before been explored.

An evaluation of published works on Piri Reis

In the past, Piri Reis’ map of Malta was the subject of at least two studies. The first study was published by Maurice Agius-Vadalá, in *The Sunday Times of Malta* in 1965² and republished as a monograph in the following year.³ In his article, Agius-Vadalá reproduced two variations of Piri Reis’ map of Malta, originating from Turkish publications. The second study appeared in 1986 in a joint article by Maurice Agius-Vadalá and Albert Ganado entitled ‘The Pre-Siege Maps of Malta 1536-1563’.⁴ The difference between these two works lies in the fact that the 1986 article included a variant of Piri Reis’ map of Malta, probably taken from one of the many existing copies of this manuscript. Furthermore, this latter map is now also available on the internet.⁵ Agius-Vadalá and Ganado relied on secondary

sources (as I shall be doing) regarding the origin of these particular maps. The first map of Malta was included in an extensive study undertaken by the future Turkish Admiral Piri Reis in his efforts to make available for his master, the Turkish Sultan, a complete and updated portolan of all the ports and islands in the Mediterranean as well as a map of the New World.

It was only recently – at the turn of the twentieth century – that scholars in Europe came to know of this important work to the extent that the portolan manuscript became the subject of a number of translations and studies which led to the unearthing of other manuscript copies both in Turkey and in a number of archives in Europe.

At this stage a distinction should be made between Piri Reis’ two world maps and his *Kitab-ı Bahriye*. The distinction is not always clear as these two



A bust of Piri Reis with a copy of his world map in the background found in the Piri Reis Deniz Müzesi, Turkey

works are often confused, with the result that false or incorrect information, in particular with regard to the respective dates, is provided. It should be stressed that the world map is the oldest document. The first world map has been dated to 923 Hegira/1513 AD. This map was published in 1935 in Ankara under the title *Piri Reis Haritası İzahname*.⁶ The editor was Yusuf Akcura. This map does not contain any information about Malta. The second world map, focusing on the northwest part of the world, has been dated to 935 Hegira/1528 AD. This too has no information on Malta.

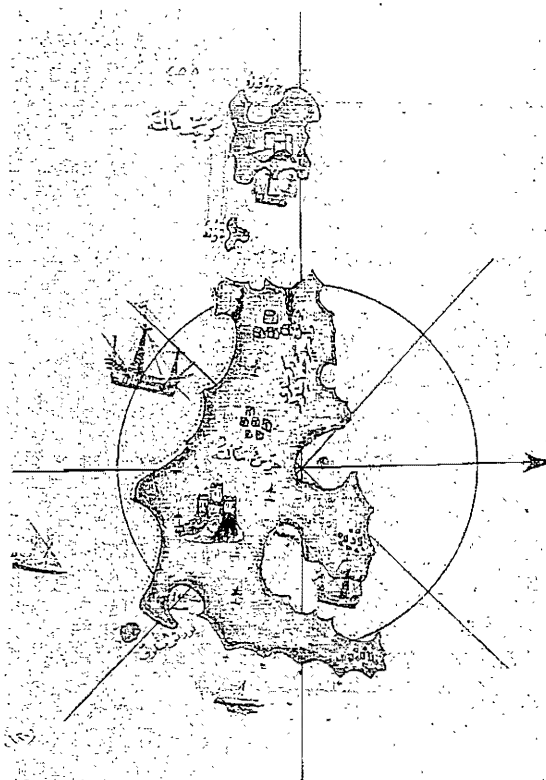
On the other hand, there are two versions of *Kitab-ı Bahriye*. The first version has been dated to 927 Hegira/1521 AD, with the second version dated to 932 Hegira/1526 AD. Information about Malta is to be found in these two versions of *Kitab-ı Bahriye*. A geographical description accompanies each and every map of this text. However, there may be differences in the maps. As these manuscripts were widely copied, the information in them has been subject to a number of changes over time. One should remember that the Piri Reis' manuscript was the most complete portolan to be written in the 16th century on the Mediterranean and the Aegean Sea. Due to its importance many of the famous old world libraries sought to acquire a copy. As I will show later on in my paper there are more than forty *Kitab-ı Bahriye* manuscripts all over the world. Twenty-five of them are related to the first version while the others are of the second version of the manuscript. Except for a small number of *Kitab-ı Bahriye* copies most of them were copied at the end of the 16th century. Other copies were made in the 17th and 18th centuries.⁷

When one considers that in Turkey alone, there are at least 12 known copies of the 1521 edition and 17 known copies of the 1528 one, more variants of the Maltese map are expected to appear once all these manuscripts are studied. These are contained in a number of libraries, archives, and other academic institutions at Istanbul.⁸ Moreover, copies of Piri Reis' work can also be traced in Europe. At least two manuscripts can be found in the Bibliothèque Nationale in Paris.⁹ Other copies are at the Oxford Bodleian Library,¹⁰ Vienna, Berlin,¹¹ Dresden¹² and Bologna.¹³ In both Bologna and Berlin there are two copies. One of the copies to be found in Bologna bears the date 1574.

German scholars were the first to show interest in these portolan editions and such interest was favoured by the privileged diplomatic relationships that the newly unified Germany cemented with the



Variant 'A' of Piri Reis' map of the Maltese Islands — taken from Navy Day - 1951 published by the Turkish Press, Broadcasting and Tourist Department, Istanbul (Reproduced from M. Agius-Vadalá's article)



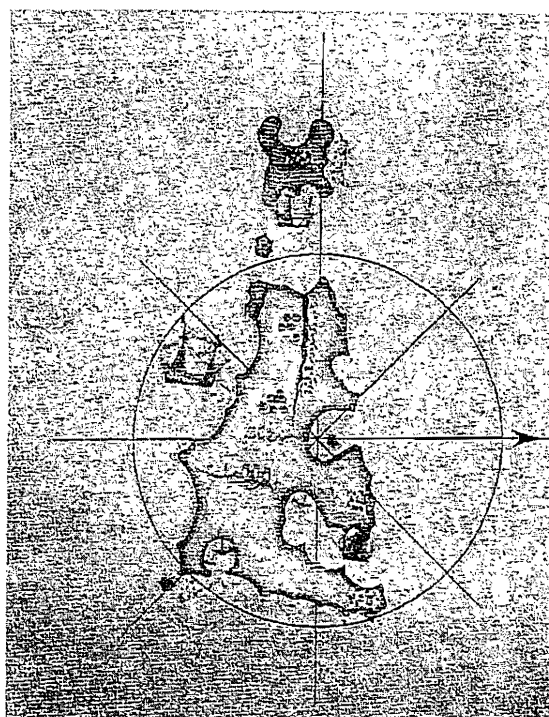
Variant 'B' — this map of Malta is to be found in the 1528 edition preserved at the Topkapi Museum (source: <http://www.skyscrapercity.com/showthread.php?t=301151>) — copies of this map can be found in various editions included the one quoted in this article (of 1988)

Ottoman Empire towards the end of the nineteenth century. On an academic level, the German interest in the region continued even after the disastrous outcome of the First World War.

I will mention here some of the main editions and translations of these two different works. The first edition was published in the early decades of the twentieth century and reproduced the 1521 edition. This manuscript was translated into German and published in Berlin and Leipzig in 1926 by W. De Gruyter & Co.¹⁴ Nine years later, the Turkish Institute Devlet Basimevi of Istanbul published a facsimile copy of the Topkapi Museum copy of the 1528 edition. In 1951, the Turkish Press, Broadcasting and Tourist Department published a variant of the Piri Reis Map. This map was brought to the attention of the Maltese public together with the one published in 1935, by Maurice Agius-Vadalá, in a series of articles published in *The Sunday Times of Malta* in November 1965.¹⁵ Agius-Vadalá classified these two maps as Variant 'A' and Variant 'B'. I have adopted this classification for the purposes of this article.

Incidentally, the different studies and publications undertaken on Piri Reis show that there are differences both in relation to text and maps. Agius-Vadalá identified at least two maps of Malta, both claimed to be derived from original Turkish sources containing different information. Agius-Vadalá also publishes the Turkish text accompanying the map of Malta. The source of his study was the description that accompanied the Variant 'B' map. It was said to have been taken from a facsimile edition published in 1935 by the Istanbul Devlet Basimevi Institute.¹⁶ In 1988, the Variant 'B' map was again published in a new edition of this portolan book of Piri Reis. However, the accompanying text was different from the one published by Agius-Vadalá. I will be reproducing this text for the benefit of the readers together with a detailed analysis of these two maps.

In fact, the 1988 edition contains all the portolan maps together with the Ottoman original, a modern Turkish rendition as well as an English translation. This edition was published by the Historical Research Foundation, Istanbul Research Centre, entitled *Kitab-ı Bahriye*.¹⁷ A new edition of Piri Reis' portolan, in these three languages, was published in Ankara in 2002.¹⁸ This new edition was also based on the 1528 version, which is generally considered as the most precise and complete edition of Piri Reis' work. One has to add that one of the maps, which I am identifying as Variant 'B', can be downloaded nowadays from the internet. Furthermore, one can



Variant 'C' - this map was reproduced in the article by M. Agius-Vadalá and A. Ganado about pre-Siege maps of Malta

also find on the internet other variations of these maps: one particular version was originally published by Ganado and Agius-Vadalá in their article on pre-Siege maps. I am also reproducing it in this article, together with an explanation of the toponyms and entitling it Variant 'C'. I found another map on the internet identified as being by Piri Reis. However, this is definitely taken from a manuscript copy of Piri Reis undertaken after the death of the Turkish admiral. This map is being labelled as Variant 'E'. Unfortunately, the site did not indicate from which edition or manuscript the copy had been reproduced. However, information in the map can help in dating it to post-1614. Finally, I am also reproducing another map, which is in manuscript form that I have found in the Bibliothèque Nationale of France. This map is labelled as Variant 'D'.

It should be noted that the description of Piri Reis produced by Agius-Vadalá and the one that I shall be proposing in this essay definitely dates to pre-1530. Moreover, both descriptions were undertaken from a mariner's perspective. The one published by Maurice Agius-Vadalá in 1966 is purely a geographical essay, indicating the latitudes and coastal features of Malta and Gozo. On the other hand, the one that I shall be studying goes beyond the typical late-medieval portolan's request, that is, a study of longitudes and latitudes. In fact, this latter description can be considered to constitute one of

the earliest known descriptions of the island in the sixteenth century. It not only has maritime references but also a short geographical description of Malta, including references to social and economic aspects. Its historical importance increases due to the fact that it was written from what has been considered as the perceptions of the enemy, and it dates from a period in Maltese history, that is the pre-1530s, which lacks any abundance of historical documentation. The map therefore provides a succinct idea of how the Ottoman culture looked upon Malta at the turn of the sixteenth century.

Various reasons may be the cause for the fact that these descriptions, in particular the one which I am proposing for analysis, have been overlooked by local historians. One reason may be due to a reluctance to consult Ottoman sources. The validity of the text has also been questioned. The descriptions of the landscape, in particular references to watermills, are considered unrealistic for sixteenth-century Malta. The author could have been attributing landscapes to Malta which in fact characterised other Mediterranean islands. The next reason is definitely linked to the Turkish language. Many western scholars have to rely on the availability of translations. The fact that both the maps and the description of Malta are in Turkish, and written in Arabic characters, makes Ottoman documents inaccessible, not only to most if not all Maltese scholars but even to many Turkish historians. The reader has to know not only Turkish but also Arabic. Atatürk's reforms in 1928 changed the Turkish alphabet from Arabic to Latin characters. Moreover, a movement was initiated in Turkey to 'purify' the Turkish language from Arabic influences, to make the syntax as well as the vocabulary as Turkish as possible. This is in direct contrast with Turkey's historic past, as throughout the period of the Ottoman Empire (1330-1919) Turkish was written in Arabic characters and was heavily influenced by Arabic vocabulary.

However, before starting the description and discussion of the text adjoining the portolan map of Malta, as well as the three maps of Malta of Piri Reis, which all date to pre-1530, I will discuss briefly the world maps.

The first world map, the one of 1513, was discovered in 1929 at the Topkapi Palace in Istanbul. It consisted of a small part of Reis' world map book, which contained even a detailed map of America, making it one of the first maps to be drawn of this continent. (The oldest is that by Juan de la Cosa which was drawn in 1500 and is now conserved in

the Museo Naval of Madrid.) In 1528, Piri Reis drew a second world map, of which a small fragment still survives, showing Greenland and North America from Labrador and Newfoundland in the north to Florida, Cuba and parts of Central America in the south. The charts are considered extremely accurate in describing the important ports and cities of the Mediterranean Sea. The most striking characteristic of his two world maps is the degree of accuracy in positioning the continents, in particular the relation between Africa and South America, which was unparalleled for its time. His maps perfectly fit an azimuthally equidistant projection of the world, which he centred in Cairo, then considered the political and religious centre of Islam. The same words of praise go to Piri Reis' portolans. Both portolans are held in high regard for the detailed information on navigation contained therein.

A study of Piri Reis' maps

The characteristic of the Piri Reis' portolans (both that of 1521 and that of 1528) lies in the fact that they contain maps of all the islands and coasts in the Mediterranean. Moreover, these charts or maps do not have any latitude and longitude grids. Instead, bearings are shown through a compass rose placed at key points, with azimuths radiating from them. The ones being classified as pre-1530 and reproduced in this paper as Variants 'A', 'B' and 'C', have this compass rose, with one of the azimuths (the one pointing to the right of the picture) having a pointer in the form of an arrow head. However, in my opinion, it is not clear whether this particular arrow points to a North direction or whether it is pointing towards Cairo. Probably, the arrow on this azimuth indicates to a seafarer the direction from where to reach Malta having set sail from the East.

On a closer inspection of the compass rose or cylindrical diagram around the map of the island of Malta, one notices the first great difference between Variants 'A' and 'C' in relation to Variant 'B'. The image of the island of Malta in both Variants 'A' and 'C' fits in the cylindrical diagram or compass circle present on the map whilst in the Variant 'B' 1528 edition the outline of the island of Malta protrudes out of this circle.

In these three maps, Malta's geographical shape is, frankly, quite badly distorted, but despite its bizarre shape the archipelago is still recognizable. One may rightly conclude that Piri Reis' map indicates only a central fortified town in Malta, which represents the sole urban area of Malta, and the rest, which

was considered rural. There are also settlements in four distinct areas, two at the north and two towards the south east of the island at the tip of two distinct promontories. Gozo has only one population centre, the central town of Rabat. Piri Reis is relatively accurate in pinpointing Malta's principal villages, streams and woods. Even the placement of the old city with its medieval bastions is pretty well drawn. In fact, the three maps reproduced here have four types of rural settlements around one fortified city. These toponomatic elements are represented in all the three maps, and with reasonable geographical accuracy. The fortified city stands without doubt for Mdina. The two other localities looking northwards can stand for the villages of Naxxar and Mellieħa. Incidentally, there is no reference to these villages by their name, but the area lying in between these villages, which is present-day Saint Paul's Bay, was extensively described in the geographical description.

The map has two other settlements, situated at the points of a southern inlet. These settlements may represent the small community that lived at the Xiberras peninsula (the area where Valletta was to be built). In this case, this settlement could also be representing the village of Qormi, which in this period, had its parish limits extending up to this peninsula. On the opposing tip of the same inlet, another settlement is represented. This could indicate the settlement of Birgu, and perhaps other settlements to be found in this area, are Żejtun, Bornla, and the hamlet of Żabbar.

There is no doubt that the map lacks detail when it comes to the description of local settlements. The presentation of these settlements (except for Mdina) is puzzling since the draughtsman failed to make a distinction between the inhabited areas. The area of the harbour is the most puzzling. Yet, if we were to accept that one of the settlements at the tip of the southern inlets stands for Xiberras peninsula, then this map can be taken as a proof for the existence not only of a settlement in this area, but also of some form of fortification, perhaps a tower. In that case, this settlement could perhaps be said to have been built in the protection of this building, supported by the presence of the two chapels in the area, the one dedicated to St Lucy and that of St Elmo, which were serving the religious needs of this community. This tower was then built after the Muslim siege of 1480, next to the small chapel of St Elmo, and presumably in the area which previously had been used as a guard post by the local coastal guard militia, known as *Mahras*. In terms of cartographic representation, the entrance to the Grand Harbour was represented

in this map as being guarded by two towers on each side of the inlet.

This urban and rural assessment shows that this map should be associated with the central place theory. Such a theory holds that the capital, or main town, would be in the middle of the island; in fact it was placed in the middle of a fertile loose belt. This means that the city needed a number of subordinate places or villages considered to be tributary settlements or nodes. One of these tributary settlements (probably that of Naxxar) was indicated in the Piri Reis' map. Cities had to be self-sufficient in essentials, which in classical times equated to cereals. This concept continued in history; mediaeval towns always sought to be as self-sufficient as possible. Furthermore, it is clear that Piri Reis portrayed also in his map what nowadays are defined as autarchic centres. These are represented by the images of the town of Rabat, Gozo, and the village of Mellieħa.

However, the manner in which Piri Reis configures the map hints that he was far more interested in port cities *per se*. The fact that he highlighted the inhabited areas next to the coast meant, in all probability, an attempt to establish some form of networking system, linking through an invisible maritime route all the different points in the Mediterranean to the heart of the Ottoman Empire. In this sense he sought to establish the key maritime points in each country. The Maltese harbour ports were very much neglected or non-existent. Malta had no important port at the time. Piri Reis had to make do with the description of fishermen's dwellings at the tip of the harbour's promontories, probably representing Birgu and the hamlet on Xiberras hill.

By not showing the roads or the links between the port, bays and the central town, Piri Reis was following the mediaeval perception for port cities, which was that they were considered as enclaves with little effect on the interior. He was only interested in the prospective contact of Malta with the outside world: that is why villages next to the coast were highlighted.

In terms of landscape, Piri Reis' maps, in particular Variants 'B' and 'C', offer other geographical information about late Medieval Malta. A careful reading of these maps can reveal more detail than what is contained in the official description. Different areas on the map bear the symbol of a 'tree', which indicates a woodland zone. Wood and water were of paramount importance to any seaborne army. The areas indicated as having an abundance of trees were close to Mdina, and towards the south in the vicinity

of the Żejtun/Żabbar area. The latter figure probably stood for the so-called Marsa garden or the other garden which is found represented in a number of old maps of Malta in the hinterland of Bonmla. Yet, these were all peripheral details for Piri Reis. His major interest was the presence of stream water.

One of the most important variations to be found in these three maps concerns precisely those streams. In fact, these early maritime maps placed great importance on water sources, and the draughtsmen sought to include them for the benefit of sailors. Yet these sources of water, in particular streams and rivers, are sometimes inaccurately located. The draughtsmen, who had probably been commissioned to execute the first map, or perhaps even these maps, seem to have confused the localities and mistakenly created a *wadi* or valley which is not in the right geographical place. The same draughtsmen may have perhaps even exaggerated the importance of the northern valleys as a source of flowing water, to the extent of thinking that they formed one big stream.

In fact, map Variants 'A' and 'C' present two main streams, with slight differences in each one of them. In map Variant 'C' the main stream is present as a river of water originating a little distance away from the fortified city of Mdina and flowing up right to the northern part of the island and out to sea at the area known in Malta as Marfa. This is geographically impossible. The northern morphology of Malta does not permit any stream of water to flow from the centre to the north. On the other hand, if one looks at the same morphology, one thinks that this representation of a stream must either refer to the northern valleys, such as Wied ir-Raheb, or the Wied tal-Madonna or the Valley of Ghajn Żejtuna. It might otherwise refer to the valley that begins from near Mdina and flows to Burmarrad, going down north-eastward, passing next to Naxxar village and flowing out to the sea in an area which is near to Saint Paul's Bay. In map Variant 'A', this valley is shorter in size and therefore this stream was perhaps making reference to some of the northern valleys, in the area of Mellieħa. In fact, one area in Marfa was also known as Dahlet ix-Xmajjar – or 'the inlet of the streams'. The maps have a second stream which concerns the northern part of the island. However, the way in which this valley is represented, flowing out to the area of Ghajn Tuffieħa, seems to refer to the valleys and streams that existed in this part of the island. In a latter map which is being produced in this paper, this stream could also be referring to the flow of water that existed on the western side of Malta, at the Fawwara and Miġra l-Ferħa area.

The length of this stream varies slightly in these two maps.

Map Variant 'B' also gives two streams. The first one concerns the main stream situated in the middle of the map. In this case, it is shorter than that to be found in these latter maps and is a representation of water valleys existing at the northern part of Malta in the area of Marfa and that of Dahlet ix-Xmajjar. The other stream is still shown erupting onto Ghajn Tuffieħa, that is, in the north-western part of Malta. However, as it is represented in this map, it could also be that it was referring to one of the valleys at the northern tip of the island. Moreover, there are also references to this source of fresh water in the descriptive text which accompanies this map. Such variations are a clear indication that these were not just arbitrary copies but maps which were being drawn or carefully corrected to better represent the geographical situation present on the island. Whatever the case, these differences reflect some confused knowledge of the valley system of Malta.

On the other hand, the promontories and bays are exaggerated in all the three variations. This confirms the dating of these maps to the first half of the sixteenth century. It was a natural enough tendency at a time when navigating by landmarks was a matter of life and death, to exaggerate the representation of promontories and bays. On the other hand, islands were accurately located when it came to geographical distances taken from various points. In the case of Malta, it was distorted in shape but well located in relation to Sicily and Tunisia. In fact, one thing that navigators of the 1500s were able to measure accurately was latitude. One should also notice that unlike in the map which was produced by Quintinus, which is perhaps the first map to be made of Malta after that of Piri Reis, the latter did not include on the west side of his map the tip of any one of Malta's nearest landmarks or continents.

In all fairness, one must not be too astonished at Reis' different maps of Malta. In itself, this was a sign that his map was considered valuable and of great importance. The same happened with Antonio Lafreri's maps for the Great Siege of Malta. Lafreri's maps were copied and re-copied so as to be used to illustrate different instances of the siege. The keen eye of the two Maltese expert cartographers, Albert Ganado and Maurice Agius-Vadalá, pointed out the many differences contained in the maps, which to an untrained viewer may appear to be identical.¹⁹

One wonders whether these different Reis maps were meant to reflect different instances in the life

history of Malta. Variant 'A' has no ships or boats represented next to the coast of Malta. Sea vessels were represented in Variants 'B' and 'C'. Yet the map with the largest number of different sea vessels was Variant 'B'. In fact, Variant 'B' has the same number of ships as Variant 'C', with the addition of another two small vessels. A small galley was inserted next to Ghar Hasan cliffs. A galleot was added next to the south-eastern coast of Marsascalea.

I do not think that the presence of ships in these two editions was a casual or an arbitrary decision. On the contrary it reflected a well-calculated strategy. I must point out that not all the maps produced in Piri Reis' book contained the image of ships or other sea vessels. For example, in the same book edition published in 1528, the map of Corfu lacks the presence of sea vessels. Even in Variant 'A' such representations are missing. There can be no doubt that these different types of sea vessels on the Malta chart expressed the type of Ottoman ships and boats which could navigate the circumference of Malta. As I shall be explaining later, these references would play an important role in the Ottoman naval strategy against Malta in 1565.

Furthermore, positioning various models of ships in different areas of the map is significant. The large vessels on the eastern side of the island indicate deep waters, a sign that big ships could navigate in this area without fear of running aground. Moreover, a big ship is normally shown in the inlet of the Grand Harbour as well as in the channel between Malta and Gozo. There can be no doubt over the interpretation of the presence of these ships in a number of Piri Reis' maps; such vessels could enter these areas without incurring any risk. Moreover, in the case of Gozo, in some maps the ship is literally placed at the entrance of Mgarr harbour, thus indicating that at the time it was the main harbour of Gozo.

There is a *mahona*, which was one of the Turkish big transport ships, placed next to the harbour of Ghajn Tuffieha, indicating that in this area the sea was deep enough to permit anchorage or passage of big ships. The same type of ship was figured also between the channel of Gozo next to Mgarr harbour, showing that such ships could enter harbour or transit in this area. Another *mahona* is present in the Grand Harbour and Marsamxett harbour. A landing barge was placed in the bay of Marsa.

On the other hand, the *mahona* ship is not present in other inlets, such as Marsaxlokk harbour. This Ottoman admiral did not consider the sea in these areas deep enough to take such big ships. The next

ship featured in this map is that of a great galley carrying a striped lateen sail, probably in white and red. The figure of this ship is situated near the Ghar Hasan area, indicating that such types of galleys could sail along this part of the Maltese coast without the risk of running aground.

A galleot, which was a smaller sized vessel, is depicted between Marsaxlokk harbour and Wied il-Ghajn harbour. In fact, the sea depth in this area is less than that off Ghar Hasan. The depiction of a galleot with lowered sail warns of the shallow seabed and reefs in the area. Coxswains were being advised to proceed cautiously under oar. The flag at the back of these ships indicated that they were the flagships of a commander of a galley or galleot squadron.²⁰ In the Marsaxlokk harbour, the landing launches are clearly depicted. The boats are under oar.

These maps were also executed in colour. In their preliminary but important study, Agius-Vadalá and Ganado show that colouring was not a random feature but followed established map conventions common at the time. In Variants 'A' and 'C', red lines indicated settlements. Deserted spots were marked with black lines, whilst rugged and rocky places were indicated by black dots. Red dots identified shores and beaches, whilst shoals and hidden rocks were marked by little crosses. The towns of Mdina (Malta) and Rabat (Gozo) were perched on a hilltop.²¹ The same features appear in Variant 'B'. It is no accident that in these three variations Malta was coloured in yellow and the hills around Mdina in orange, whilst Gozo is in green. Doubtless the green colour stood for Gozo's rich soil deposits which made this island fertile. Yellow represented the excessive areas of wilderness that existed in Malta due to the clay and rocky strata in a number of areas on the upper part of the geographical plateau. Orange could have indicated that this was a hilltop area. These colours fall within Piri Reis' design to distinguish zones of high relief from zones of high altitude in his map.

Two geographical descriptions of Piri Reis

At this stage I would propose a re-reading of two of Piri Reis' texts. To help the reader understand the variations that may exist in the texts, I am first reproducing one text to the two translations produced by Maurice Agius-Vadalá in his text. The chosen text is that of Neil T. Heywood.

"There is a white headland: they call it Kavu Biyanco. The area before this island of Koz and the island of

Kamuna is from twelve to fourteen fathoms. Besides being a good anchorage, if ships lying there wish to moor, they make fast to the headland of Kuvan and drop anchor in the straits. When there is W.S.W. wind, it is a good anchorage. Now from the island of Malta to Tripoli of the Maghrib is 140 miles in the direction of Mecca. And Jizbe island is 250 miles to the S.W. (or perhaps S). And Panteleriye island which they call the famous Juhudluk is 16 miles to the North West. And the headland called Kavü Paseru on the island of Hiccilye is 60 miles to the North East. Thus let it be known.”²²

More rich in information is the next description attached to the map Variant ‘B’ related to the 1528 copy of the portolan. As was a normal habit with a number of portolans of the time, besides the fact that this book was presented to the sultan it was enriched with geographical details. It was an old established tradition amongst Arabic travellers to write geographical descriptions in their political studies. Piri Reis appears to have followed this tradition when formulating the copy to present to the sultan. Each map is accompanied by a geographical description, peppered with political and military information.

“This island of Malta is subject to the prince of Ispanya and it measures sixty-five miles or so in circumference. It is a low-lying and prosperous place and they say it has sixty villages. It has a castle and it is in good condition. This castle is situated atop a hillock some four miles inland on its northern side is a bay they call Moranso (Marsa?). Near the northern promontory and facing west is a ruined castle that they call Buraka (Benwarrad). The sea before this castle is a safe haven but when approaching this shelter from the aforementioned promontory the coast is shallow and one should be wary. Inside this bay at its far end is a good harbour and caiques from Malta lie here. West of this bay is another and it is called Alsanto (Saint Paul’s Bay). This is a good anchorage. Inside this bay at its far end are underground storerooms before which there is a small islet all around which is a safe haven. The depth is six fathoms.

On the south-eastern side of this island is a natural harbour they call Şarxal Suluk, (Marsaxlokk) which is fine shelter against all winds. Outside the entrance to this harbour on the south-south-western side is a small island (Filfla). If one proceeds along the Maltese coast westward, one finds all smooth-water anchorages.

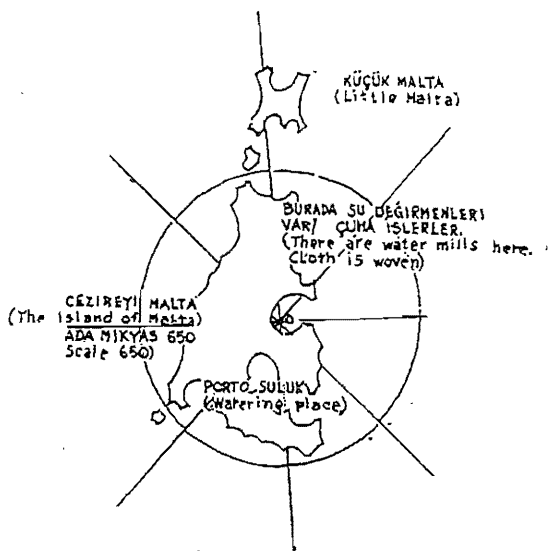
On the south-western side is a cove facing south. At

a place inside it facing the southeast there flows a river. The cape where this stream flows is the south-western most extremity of the island. After rounding this cape, to the west, there flows a stream facing the west. They work broadcloth on this stream and there are also some water mills here as well. There are anchorages everywhere.

Opposite the places described here is an island that they call Koza, which is what Turkish seamen call Küçük (Gozo). This island has a castle and it is in good condition. On the eastern side of the castle is a cove that is a shelter. There is also a well there whose water is drinkable (Mğarr). Between this island and that of Malta there is a little islet that they call Kamuna. There is safe passage along every side of the island, even for big vessels. It is also a shelter. If one should lie opposite this islet – that is, along the shore of Malta – there is a white cape there that they call Kavü Biyanko (Ahrax, next to the White Tower) and there are good anchorages in the sea before it. Between Koza and Kamuna Islands, the depth varies between twelve and fourteen fathoms. If a bargia lying here wishes to take a line ashore she should do so on Koza cape while dropping anchor towards the channel. When the provenza blows, this is a fine shelter.

Now this island of Malta is a hundred and forty miles from Mağrib Tarabolusu to the south and two hundred fifty miles from the island of Cirbe to the southwest, Pantalerine island (that is, the island known as Cuhudlik) is a hundred and sixty-five miles away to this west-northwest, while the distance to the cape known as Kavü Paşaro on the island of Cicilye is sixty miles north by northeast. Let it be known as such.”

Such a description enhances the importance of the area of Saint Paul’s Bay. Whilst, until now, the major port of Malta was considered to have been Birgu, in terms of Mdina, Saint Paul’s Bay had an important economic role. It was the area which gave to this city its major supply of fresh fish. The presence of fishing boats (caiques) in Piri Reis’ description confirms this. Moreover, further confirmation could be encountered in Hospitaller documents, as even after the development of Valletta, in terms of fishing activity, Mdina continued to be considered distinct and its fishermen remained associated with the area of Saint Paul’s Bay. Moreover, Reis indicates the presence of watermills. Here one has to look at the geomorphological position of Malta and the reference to the presence of stream water on the maps, in particular Variants ‘A’ and ‘C’. Watermills were present in the area of Burmarrad, that is at the

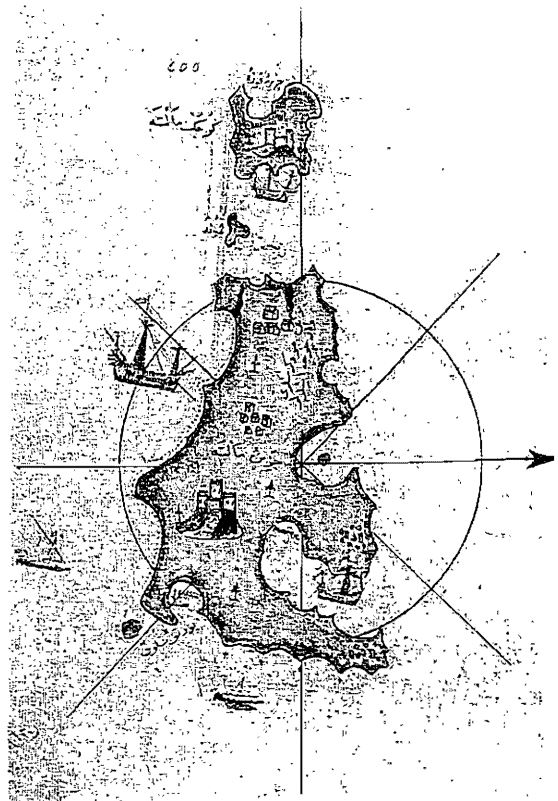


Variant 'A' with transcription and translation by Prof. Faruk Sumer and Prof. Ahmed Uysal of Ankara University

mouth of the Wied il-Ghasel Valley that starts from the area of Mdina and runs down towards Naxxar until it empties into the sea. Unfortunately, this area was totally transformed by the Knights of Saint John in the late sixteenth century to build salt pans, in their drive to develop an industry of salt making in Malta. Thus any archaeological remnants of watermills and the making of cloth (with which these watermills are normally associated) are lost. Due to its strategic position and amount of water that it produced, the area and this particular valley made it possible and feasible to have watermills constructed at its mouth. In fact, this was an important feature as it was also written on the maps and is to be found in the three variations. Incidentally, Variant 'A' had only two place names listed – this one and that of Marsaxlokk. The latter represented one of the most important inlets or ports for the Ottoman army. Incidentally, the place name Marsaxlokk would in Turkish suggest a watering place. This could have been a reason for including it mistakenly thinking that there were springs in the area. However, I think that this was only accidental and 'porto suluk' was written in this map for its maritime importance as a sheltering harbour, falling within Piri Reis' aim to distinguish aspects of geographical relevance, as represented by the identification of important bays, and the study of Malta's coastal circumference.

The Great Siege of 1565

While Piri Reis was compiling such a mammoth work, Europe was suffering one of its prolonged periods of crisis. To explain such a prolonged crisis, three hypotheses have been put forward. The first



Variant 'B' with the translation of the place names

involves plague, the second social exploitation and the third ecological issues.

Other major crises were again experienced in the second half of the sixteenth century. The first one was in 1564, followed by others in 1580, 1586 and 1599. Ironically for the Ottoman Turks, the first crisis occurred in the year prior to their invasion of Malta. These crises affected the Knights' organisation of defence as many European monarchs, including the viceroy of Sicily, had great difficulties in meeting the grandmaster's requests for reinforcements. But how could one blame any country in Europe for failing to assist a frontier territory, which was merely a small island, when much larger territories were just recovering from a general subsistence crisis? The situation in Europe however improved by the second half of 1565, allowing European powers to send relief. This inadvertently would take the besieging Turkish army by surprise.

Scholars agree that the Turkish besieging forces in Malta suffered also from a weak military strategy. This could be in part the result of the Turkish commanders' reliance on outdated information in their possession. This was to the Knight Hospitallers' advantage and helped them to survive the siege.

Here one is tempted to ask what part, if any, did Piri

Reis and his description play on the Turkish armada, and what were its effects on such an important siege?

The Turks seem to have lacked any good cartographic evidence on Malta, and there was a gap between the Piri Reis map and more updated variations. The Turks seem to have preferred to continue working on the Piri Reis map, upgrading whenever necessary to make it meet the changing realities that were occurring in Malta and the rest of the Mediterranean. But no major upgrade seems to have taken place, on the current evidence, between 1528 and 1565. It seems to have been only as a result of the Great Siege that the Ottomans began drawing up new maps of Malta, while still departing from the Piri Reis' map. Other maps were produced *in situ* during the siege itself.²³

In the face of good cartographic information on Malta it is not entirely fair that history lays all the blame for the failure of this venture simply on Mustapha Pasha, for failing to take the advice of the corsair Torghud Reis, known as Dragut, and seeking instead to focus his effort on safeguarding the Turkish fleet. The cause of the defeat is definitely more complex, as, I am sure, further research on the subject through Ottoman sources would inevitably reveal.

Western historiography, in particular that dating back to the time of the Siege itself, made the God of the Christians appear to have been set against the Ottoman forces from the onset of the campaign. The chronicler Francesco Balbi recounted the foundering of a ship carrying provisions.²⁴ According to the official chronicler of the Hospitaller Order, Giacomo Bosio, the whole Turkish armada headed towards Marsaxlokk.²⁵ However, it was so big that not all the ships could enter harbour. In fact, Bosio claimed that it continued going round the island.²⁶

Be that as it may, there is no doubt that such a strategy was in part dictated by the maritime information which was in the hands of the Turks. Piri Reis had already shown that the passage between Malta and Gozo was deep enough to allow big vessels to sail across, whilst the Ghajn Tuffieħa area offered another safe area for the passage of ships. Furthermore, the Piri Reis map indicates three harbours. The first one was that of Saint Paul's Bay, the second one was that of Marsaxlokk, and the third was the Grand Harbour. Moreover, Piri Reis' portolan discouraged the use of Marsaxlokk harbour as a safe port for the big ships as it was considered too shallow. At the same time, this area was continuously indicated in the Piri

Reis map, including in the copies of the following decades, as one of Malta's principal harbours.

On the other hand, in terms of depth, the Piri Reis map of 1528 had already indicated that the Grand Harbour and the harbour of Marsamxett were the ideal places for the berthing of big ships. One can rightly conjecture that from the start of the campaign, all military operations that were formulated in Istanbul based their information on the Piri Reis map. Perhaps it had been already set in Constantinople that on the information at hand from the Piri Reis map the whole Turkish Armada should first of all seek the safety of the Grand Harbour and Marsamxett Harbour; and this was what had been first sought by the Grand Turkish Commander Mustapha Pasha and his team. Until this was to be reached, they were to seek shelter at Marsaxlokk but at the same time, grasp the advantage that the sea towards the northwest had enough depth for the anchorage of big ships. Thus, irrespective of the opinion of other minor leaders, such as the Bey of Tripoli Torghud Reis or the Bey of Algiers Hassan Agà, the advice of Piri Reis was considered sacrosanct in safeguarding the fleet of an emerging empire. Without a formidable fleet, no empire, past or present, can lay claim to glory. Even the land campaign could have been influenced by the information on this map. In this map, the tower of Gozo was said to be a strong fortress. One can argue that this information eventually was proven to be no longer valid by Dragut in 1551. However, in distant Constantinople the presence of this small fortress was not being underestimated. One has also to remember that the Gozitan fortress was won after a truce which had been reached between the governor and the besieging army and not as a result of the sheer destruction of its fortifications. Furthermore, it resulted in a victory without aftermath, as after the North African corsairs had subjected the inhabitants into slavery, the conquered citadel was immediately abandoned.

Ironically, the last remaining harbour mentioned by Piri Reis, that is, Saint Paul's Bay, ended up being used by the Turkish admiral, as the departure of the Ottoman fleet from Malta was undertaken from this area.

Unfortunately for the Turks, the military strategy they adopted proved to be a disaster. Quoting a term which was used some years prior to the siege by a Jew living in Constantinople, the physician Joseph ha-Cohen, Malta became not only a 'vale of tears' for the Jews for the fact that the Knights subjected the latter into slavery, but also for the Ottoman army.

Many young lives were lost in a three-month siege that proved futile for the Ottomans.

Post-Siege period maps

Despite the failure of the Malta campaign, the Piri Reis portolan did not lose much of its importance. As was the praxis at the time, both in Europe and in the East, old manuscripts continued to be copied. At the same time, the copiers attempted to update the information given with the facts available at the time, in order that this portolan could remain a valid document.

The Turkish defeat in the Siege of Malta of 1565 and the first hand experience gained in Malta brought about a change in the future copying of the Piri Reis portolan. This portolan continued to be copied but the map, in particular the one for Malta, was also updated. In order to do this the Ottomans had also at their disposal a number of printed maps, such as the Lafreri map which they could use to make the necessary adjustments.

There exist at least two indications that the Piri Reis map of Malta was subjected to an updating process. The first attempt was a copy of the Piri Reis portolan, which is preserved at the Bibliotheque Nationale of Paris, at Rue Richelieu. This library has at least two copies, which are preserved in the Oriental section. Each copy is accompanied by a short written description together with an accompanying map. One of these copies contains the same map (or a similar one), which has the geographical features of Malta as contained in the 1519/1528 editions. On the other hand, the map in the second manuscript copy is different²⁷ and it features the island of Malta according to the delineations of Antonio Lafreri or other map producers of the time such as Domenico Zenoi and Paolo Forlani (1567), Antonio Francesco Cirni (Rome, 1567) and Francesco Balbi da Correggio (1568). This map follows the same delineations and seems to belong to the same type of school.²⁸ This map is being marked as Variant 'D'.

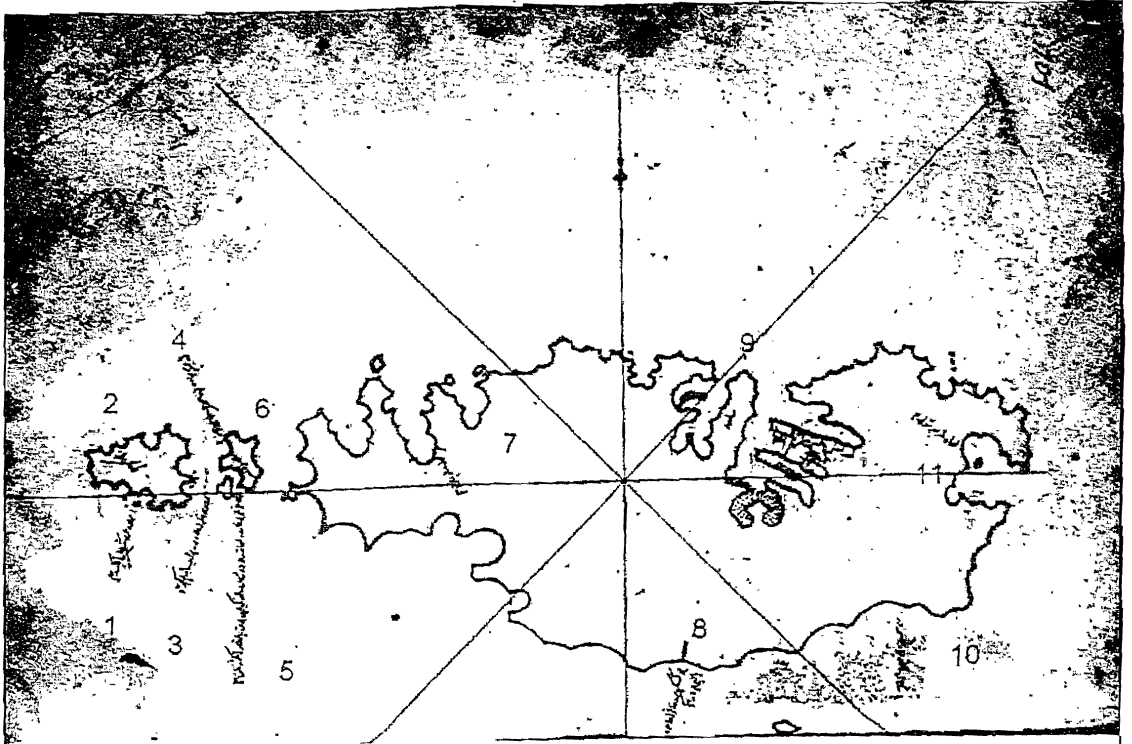
In terms of wind directions, this map follows the same model to be found in Variants 'A', 'B' and 'C', and it contains no compass but azimuths, with the one on the left having a pointer to indicate either the North or the direction towards Cairo or Constantinople. This map also has a number of indications. The only settlement that is well represented is Birgu. The rest of the settlements have been removed. There is no doubt that this was done after the arrival of the Knights in Malta. In fact, it is following the Order's

new principles in terms of urban assessment of Malta:

The arrival of the Knights in 1530 destroyed the Piri Reis pattern as expressed through his map and his description of Malta, based on a central place theory. Malta had now become a base for regional sea power. The principal node of this structure lay in the choice of town or city as a seat of power. In the case of Malta, it was the harbour area, exactly around the town of Birgu, which gradually became a flourishing maritime centre. Thanks to the geographical choice of Birgu as the new seat of power, a new concept was being introduced in Malta. Applying Polanyi's arguments for Birgu, this latter city becomes what he qualifies as a 'port-of-trade', and to use archaeologists' terminology, the area is for the first time in modern history truly a 'gateway settlement'.³⁰ This Piri Reis map tries to take this new geographical assessment into consideration.

Thanks to the help of Professor Idris Bostan, a number of place names and other information written on the map were disclosed. The map has reference to three place names besides a description of a number of bays and what type of services they could offer to the Ottoman navy. The fort of Saint Elmo is indicated on this map only by its name. The only built up area given is that of Birgu. This can help to date the map to around the middle of the sixteenth century and possibly to the post-siege period. Moreover, all the representations of ships had been removed except for one, the figure of a *mohana* situated in the Grand Harbour at the far end of the so-called galley creek. The bay and marshland of Marsa was well indicated by a series of dots on the map. The harbour of Saint Paul, as well as Marsaxlokk, are also mentioned. Gozo is referred to again as small Malta.

Particular importance was given to the northern part of Malta, in particular the area around Kemmuna (Comino). The surrounding sea around Gozo was described as very good for navigation and defined on the map as "clean", meaning that there are no important reefs or rocks. The channel between Malta and Gozo was also mentioned and described as "a very good place for anchoring" and that "big ships can sail through". The island of Kemmuna was identified by its name, and its two most important inlets also examined. The bay of Santa Maria was specifically mentioned. According to this map, it could accommodate five ships and was good for anchorage both in summer and in winter. The bay and area known today as Blue Lagoon in Comino was reviewed. This strait was portrayed as



Variant 'D' - the copy of the Piri Reis map at the Bibliotheque Nationale of Paris²⁹

The Turkish text

English translation of text

1	Mezbûr cezîrenin etrâfı pâkdir.	1	All the surroundings of the mentioned island are clean
2	Küçük Malta	2	Small Malta.
3	Mezbûr boğaz a'lâ demir yerleridir, barça geçer	3	Mentioned strait is a very good place for anchoring, <i>bargia</i> passes
4	Beş altı pâre gemi yerdır, yaz ve kış	4	It is a place for five ships in summer and winter
5	En kumlu boğazdır. Limandır, her rüzgâra. Malta gemilerin bunda yağlar ekser zamanda.	5	It is the most sandy strait. It is a port for every wind. Maltese mariners usually grease their ships here.
6	Okunamadı	6	Kemmuna.
7	Liman-ı San Pavlo	7	Port of St. Paul
8	Yüksek yerden akar a'lâ sudur, yalı yerdır	8	It has very good water which runs down from a high place. It is a shallow place.
9	Santarma	9	St. Elmo
10	Eşkâl-i Malta bu resimdir	10	This picture is the appearance of Malta.
11	Liman-ı Marsa Şolok	11	Port of Marsa Şolok.

“extremely sandy” and said to be “a port for every wind” to the extent that “Maltese mariners usually grease their ships here”. The area of Fawwara and Miġra l-Ferha was depicted as “having very good water which runs down from a high place”. At the same time, the map warned mariners that the area was “a shallow place”. In fact, this information can be corroborated by geographical analysis of this zone. Besides the fact that the meaning of both place names in Malta carries a connotation for running water, there is in this area one of Malta’s most important water tables. Water still seeps into the sea up to this present day.

The second map, which also belongs to the Piri Reis cycle and was composed many decades after the Siege of Malta, has been downloaded from the Internet. Unfortunately, the site does not give the origins of this map or any relevant information.³¹ No doubt, this map is part of a manuscript copy of the Piri Reis portolan as other maps belonging to the same cycle have been identified and also downloaded from the same site just mentioned. According to this site, these Piri Reis charts were erroneously dated 1521, when in reality they are definitely an updated version of these early manuscripts originating in the early seventeenth century. In fact on a close inspection of the map of Malta that was featured on the Internet site one can safely conclude that it was produced after 1614. When one considers the period in which it was produced, one has to conclude that its quality is very bad. At that same time, far better maps of Malta were being drawn in Europe.

This map reveals that, unlike what is usually thought, certain types of galleys continued to operate in the seventeenth century. In fact, the images of galleys on the Piri Reis map Variant ‘E’ clearly show that it was composed after the Siege of 1565 but these galleys are normally thought to have fallen into disuse after Lepanto (1571). Furthermore, this old map was itself subjected to a number of retouches to update the information shown on it. The presence of a chain that closed the entrance to Galley Creek, from Senglea to Birgu, as well as the city of Valletta, Birgu and Senglea, points to a reality present in Malta during the Siege period. This chain was not present in the Grand Harbour at the turn of the seventeenth century.

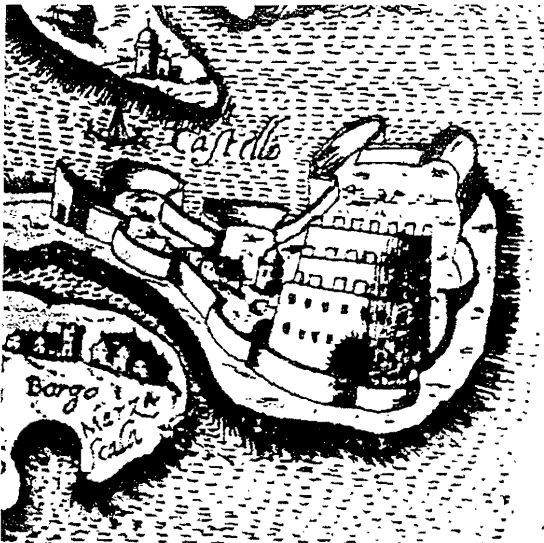
On the other hand, the six galleys figured entering the Grand Harbour of Malta, are painted with a main mast in the middle supported by a foremast, which is much shorter when compared to the main mast. Such a feature is to be found in galleys used mainly

up to the end of the sixteenth century. A number of military stations are placed around the coast. These can stand for coastal towers (and if this is the case, then the dating of the map has to be put forward as far as the middle of the seventeenth century) as the construction of most of these towers dates to the first half of the seventeenth century.

It is interesting to know that this post-Siege map has two compass roses and the poles are for the first time clearly indicated.

When it comes to the representation of ships, this map varies slightly from those of 1521 or 1528. The big *mahona* remained next to Ghajn Tuffieha Bay. The area was considered deep enough to permit anchorage or sailing under sail. However, they were not included next to Mġarr harbour or in the Grand Harbour. On the contrary, this harbour was featured with approaching galleys. Furthermore, all references to boats in the Marsaxlokk harbour have been removed. This harbour was no longer considered safe for anchorage. Was this a direct result of the Great Siege fiasco? The whole military strategy during the siege was perceived in the function of the naval exigencies which were to open the entrance to the Marsamxett harbour for the Turkish ships. Until this aim was achieved, there could be no respite. Then, the second focus was on Birgu. Its fall would not only facilitate the capitulation of Mdina and Gozo, but if by chance they met with resistance, the remaining part of the fleet, which was still at anchor in open seas, could come in.

This new strategy, as expressed in this map of Piri Reis, was put into practice in the attack made by the Turkish Armada on Malta in 1614. The Ottoman fleet then consisted of about sixty galleys and took shelter in the Wied il-Ghajn and Saint Thomas Bay area.³² This event was recorded on this map as, next to the geographical location of Saint Thomas Bay it was written that the Ottoman Armada “has disembarked the soldiers from here”. Then, the description continues with the information that “now the infidels have built a tower” in direct reference to the construction of Fort St Thomas. The map contains references to the position of the winds as well as to the water mills (placed in the Marfa area), Fort St Elmo, Birgu, Marsaxlokk, Mdina, St Paul’s Bay as well as “Santanca” or which seems to be direct reference to Fort St Angelo or St Michael. Whilst the word seems to be referring to St Angelo more than St Michael, it was placed in the area of the map normally associated with the latter fort in the hinterland of Senglea.



A representation of Fort St Angelo and the Borgo in the 16th century

The Siege experience seems to have lingered on in the psyche of Ottoman seafarers, whilst the defeat, irrespective of the Knights' sentiments, made the conquest of Malta a remote possibility for the Ottoman agenda.

This article was written to bring to the fore the richness of these maps and of the accompanying text *vis-à-vis* the history of Malta and its study. In particular, variations across the different copies can help the European and local scholar witness changes in opinion and attitudes experienced by the mighty Ottoman Empire towards this small fortress at the heart of the Mediterranean. One hopes that a systematic study of the different maps and descriptions contained in the many copies and editions of the Piri Reis manuscript will one day form the basis of a systematic in-depth academic study.

BIBLIOGRAPHY

- Piri Reis, *Bahriye*; das türkische segelhandbuch für das Mittelländische meer von jahre 1521 (Berlin und Leipzig, 1926).
- Kitab-ı bahriye / Piri Reis*, Ertugrul Zekai Okte (ed.), Turkish text, Vahit Cabuk, Tulay Duran, English text, Robert Bragner, (Istanbul, Turkey, c.1988).
- Piri Reis *Kitab-i Bahriye*, Bulent Ari (ed.), transliteration from Ottoman, Ahmet Demir (Ankara, 2002).
- Afetinan, A., *Life and works of Piri Reis: the oldest map of America* (Ankara, 1975).
- Akcura, Y., 'Map drawn by Piri Reis. Turkish interest in America in 1513: Piri Reis' Chart of the Atlantic made some ten years after Columbus' first discoveries and seven years before Magellan rounded Cape Horn!' *Illustrated London News* (23.vii.1932), 142-3.
- Deismann, A., *Forschungen und Funde im Serai. Mit einem Verzeichnis der nichtislamischen Handschriften im Topkapu Serai zu Istanbul* (Berlin/Leipzig, 1933).
- Kahle, P., *Die verschollene Kolumbuskarte von 1498 in einer türkischen Weltkarte von 1513* (Berlin/Leipzig, 1933).
- Kahle, P., *Piri Reis, und seine Bahriye* (Beiträge zur historischen Geographic, 1927).
- Kahle, P. (Hrsg.), *Piri Re'is. Bahriye. Das türkische Segelhandbuch für das Mittelländische Meer vom Jahre 1521* (Berlin, 1926).
- McIntosh, G.C., *The Piri Reis map of 1513* (Athens, Georgia, 2000).
- Mesenburg, P., 'Kartometrische Untersuchung und Rekonstruktion der Weltkarte des Piri Re'is (1513)', *Cartographica Helvetica*, 24 (2001), 3-7.
- Ozen, M.E., *Piri Reis and His Charts*, translated by N. Refioğlu, (Istanbul, 1998).
- Soucek, S., *Piri Reis & Turkish mapmaking after Columbus: the Khalili Portolan atlas* (London, 1996).

REFERENCES AND NOTES

- ¹ I would like to thank Professor Idris Bostan for his help and assistance in reading and translating the Turkish text on maps reproduced in this article. With his help and assistance, a number of points developed in this paper, in particular in relation to the two new maps of Malta that I am publishing here, would not have been possible. I would also like to thank Dr Martin Zammit for helping in transcribing and transliterating the words written in Arabic characters of some of the maps.
- ² *The Sunday Times of Malta*, 24.xi.1965, 31.xi.1965, & 7.xi.1965.
- ³ M. Agius-Vadalá, *Piri Reis Map of the Maltese Islands* (Malta, 1966).
- ⁴ M. Agius-Vadalá & A. Ganado, 'The Pre-Siege Maps of Malta 1536-1563', *Investment Finance Bank Limited Malta. Annual Report and Accounts* (Malta, 1986).
- ⁵ www.mymalta.com/Kemmuna/oldmaps.html. Unfortunately, the author did not make reference to the origins of his source but one can rightly presume that it was taken from the 1986 article by Agius-Vadalá and Ganado.
- ⁶ Y. Akcura (ed.), *Piri Reis Haritası İzahname* (Ankara, 1935).
- ⁷ I thank Professor Idris Bostan for forwarding me this information.
- ⁸ The following are institutions in which a copy of the Piri Reis Portolan book was traced: (i) The Library of the Treasury Department, Topkapi Palace, No: 575; (ii) Topkapi Palace Library, No: 333; (iii) Nuruosmaniye Library, No: 2290; (iv) Nuruosmanlyc Library, No: 2292 (dated 1626); (v) Koprtilti Library, No: 172 (no date); (vi) Library of the Naval Museum, No: 59, 50 (2 copies).
- ⁹ Paris, National Library, No: 220-965 (956). One bears the date 1587 (A. 996)
- ¹⁰ A copy is to be found at the Oxford Bodleian Library.
- ¹¹ It is found at the Berlin State Library. According to one internet source, the date of the copy is 1644.
- ¹² Dresden, the date of the copy is 1544 (Arabic date 961). Part of it was published in 1926 by Paul Kable.
- ¹³ Bologna, No: 3612-3613. Only one has a date and according to an internet source this is 1574 (A. 982).
- ¹⁴ Piri Reis's, *Bahriye*; das turkische segelhandbuch fur das Mittellandische meer von jahre 1521, Published/Created: Berlin und Leipzig, W. de Gruyter & co., 1926.
- ¹⁵ Agius-Vadalá, 2.
- ¹⁶ Ibid.
- ¹⁷ *Kitab-ı bahriye / Piri Reis*; editor, Ertugrul Zekai Okte; Turkish text, Vahit Cabuk, Tulay Duran; English text, Robert Bragner. Published/Created: [Istanbul, Turkey], Historical Research Foundation, Istanbul Research Center, c1988.
- ¹⁸ Piri Reis, *Kitab-i Bah riye*, editor: Bulent Ari, transliteration from Ottoman, Ahmet Demir, Ankara: T. C. Başbakanlık Denizcilik Müsteşarlığı, 2002.
- ¹⁹ A. Ganado & M. Agius-Vadalá, *A Study in Depth of 143 Maps representing the Great Siege of Malta of 1565*, i & ii (Malta, 1995).
- ²⁰ I owe this information to Mr Joseph Muscat.
- ²¹ Agius-Vadalá & Ganado (1986), 1.
- ²² Agius-Vadalá, 16.
- ²³ Ganado & Agius-Vadalá, ii (1995), 135.
- ²⁴ F. Balbi, *The Siege of Malta 1565*, trans. by Henry Alexander Balbi (Copenhagen, 1961), 51.
- ²⁵ G. Bosio, *Dell'Istoria della Sacra Religione et Illustrissima Militia di San Giovanni Gierosolimitano*, iii (Rome, 1602), 514.
- ²⁶ Bosio, p. 515. For a detailed reading of the Great Siege, vide S. C. Spiteri, *The Great Siege, Knights vs Turks MDLXV* (Malta, 2006).
- ²⁷ Bibliothèque Nationale de France, Supp. Turc. f. 101.
- ²⁸ The Bibliothèque Nationale de France possesses two copies of the Piri Reis. They are in Supp. Turc. 956 entitled *Kitab i Bahriye Piri Reis* (the section on Malta is on p. 257^v) and Supp Turc 220 (the reference on Malta is on pp. 100^v to 101^v).
- ²⁹ The transliteration and eventual translation of the toponyms on this map was kindly undertaken by Professor Idris Bostan.
- ³⁰ P. Horden & N. Purcell, *The Corrupting Sea, A Study of Mediterranean History* (Blackwell, 2002), 392.
- ³¹ <http://digilander.libero.it/capurromrc/mappegeo.html>
- ³² S. Mercieca, 'The 1581 Catastrophe, or the Story of Two Poor Families Afflictions', M. Camilleri & T. Vella (eds.), *Celebratio Amicitiae Essays in honour of Giovanni Bonello* (Malta, 2006), 17.