MALTA ARCHAEOLOGICAL REVIEW

THE JOURNAL OF THE ARCHAEOLOGICAL SOCIETY, MALTA ISSUE 7, 2004-2005

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The *Malta Archaeological Review* welcomes the submission of papers. For Author's Guidelines turn to page 71 of this publication. Please note that the Editor will be unable to accept submissions if they do not conform to these Guidelines.

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MALTA ARCHAEOLOGICAL REVIEW

Contents

Front cover: Tobacco pipes from the 2001 excavation off the Lazaretto on Manoel Island, Malta

From the President

Patricia Camilleri

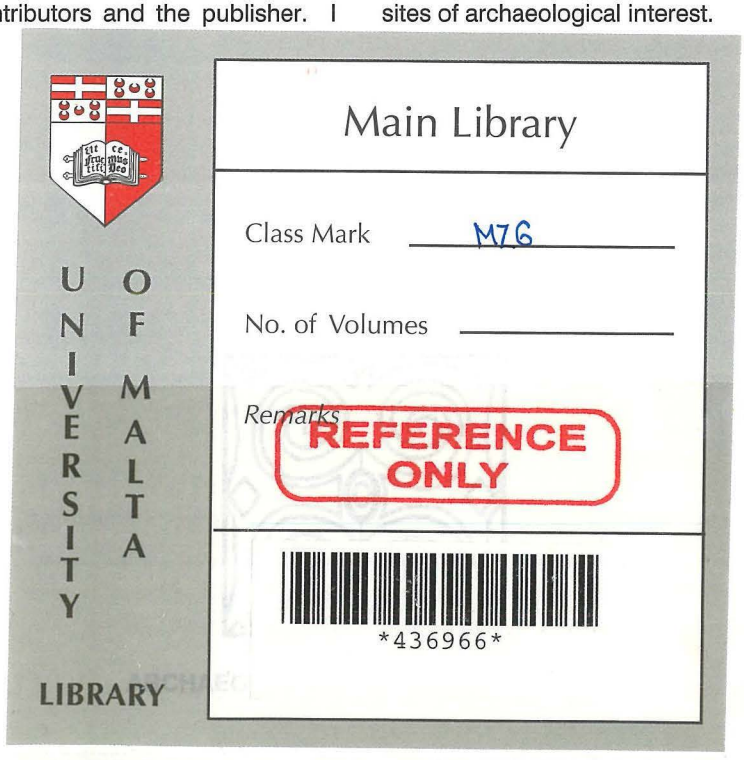
As I write this editorial, the University of Malta is gearing up to host the 14th Annual Conference of the European Association of Archaeologists. Some 450 members of the EAA will participate in this important gathering to discuss a very wide range of issues.

The EAA Conference has become a key event in the archaeology calendar not only for practitioners in Europe but from around the world. As always, the participant list is impressive and the University of Malta and Heritage Malta are delighted to be able to showcase our islands' history and archaeology to such an eminent group.

This is the 7th edition of the Malta Archaeological Review. It has been rather long in the preparation, so it is a real joy to finally see it in print. We are already putting together the next edition which, I assure you all, will not take as long to see the light of day. One of the main reasons for this is that a new editorial board has appointed an MAR coordinator whose job it will be to liaise between the board, the contributors and the publisher. I am convinced that this will help speed up the procedures enormously.

Over the years, the MAR has attracted some interesting papers and the fact that back copies are continually being requested is a sign that the standard of the contributions was always high. However, the time has now come for this journal to become an officially peer-reviewed publication. This will come into effect from the 8th edition and, as editor, I really hope that this will encourage more academics to contribute to the MAR. It will also give an opportunity to our non-professional, but often very expert, contributors to be assured of the good level of their work.

I am confident that the MAR will to continue to be a venue for good quality papers and dynamic discussion and I encourage anyone who has an idea or a question, to submit even a short, one-pager for consideration by the board. We would also like to see reviews not only of books but also of documentaries and films and even internet-based sites of archaeological interest.



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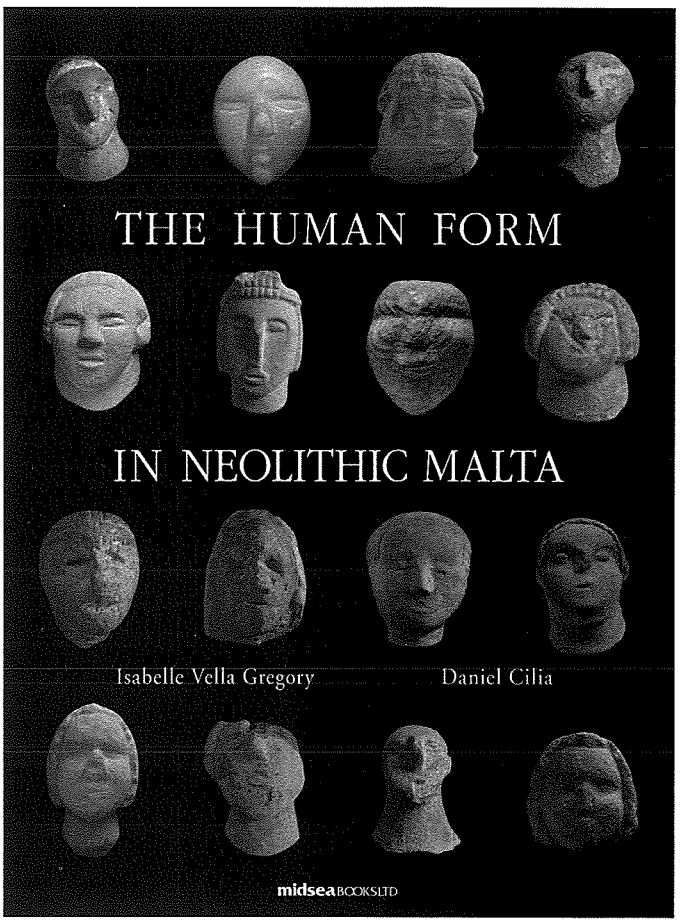
Isabelle Vella Gregory has produced an exhaustive study describing every piece, its context and how it relates to the others. There is a valuable general discussion of what it all means, what it can tell us about the remarkable religion and society of the time.

As important as the text are the illustrations by Daniel Cilia. Many pieces are illustrated not only from the front, as we have seen so often before, but also from the back, from one or both sides, and even, where relevant, from vertically above and below. When illustrated in this way, detail never previously apparent without actually handling the pieces can add new insights.



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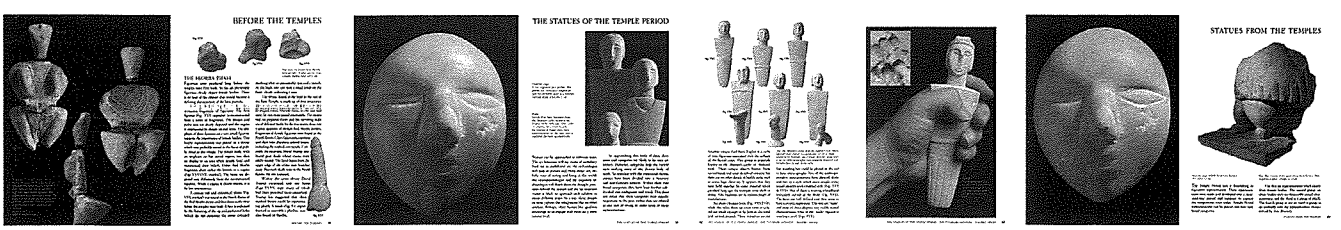

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Society Activities

2004

SITE VISITS

Thursday, 5 February

A guided visit by *Mr Kenneth Gambin* around the exhibition: 100 years of heritage 1903-2003: the story of museums, collections and heritage sites at the National Museum of Archaeology, Republic Street, Valletta, in collaboration with Heritage Malta

Saturday, 30 October

Site visit to Comino led by *Mr. Keith Buhagiar* and by *Ms Annelise Falzon* from Nature Trust

Saturday, 27 November

Site visit to San Niklaw led by *Mr Keith Buhagiar*

30 October 2004

LECTURES

Wednesday, 25 February

Ms Isabelle Vella Gregory

Return to Mother Earth: More than meets the Eye, in collaboration with Heritage Malta

Tuesday, 23 March

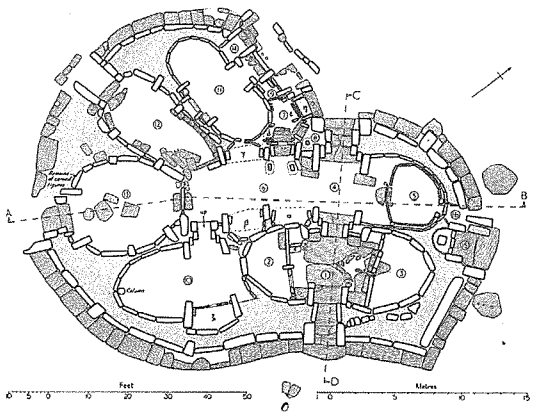
Ms Allison Camilleri

The Archaeology of Beekeeping, in collaboration with Heritage Malta

Thursday, 23 September

Prof. Bernard Knapp

Island Archaeology and Island Identity in



15 December 2004

27 November 2004

22 January 2005

the prehistoric Mediterranean
Wednesday, 13 October
Br Josef Mario Briffa SJ
The excavation of the Ħal Saflieni Hypogeum under Fr Emmanuel Magri SJ: new light from letters to the British Museum
Wednesday, 17 November
Dr Claudia Sagona
From Cunaxa to the Black Sea. Xenophon and the 10 000
Wednesday, 15 December
Ms Katya Stroud
The Conservation of Hagar Qim

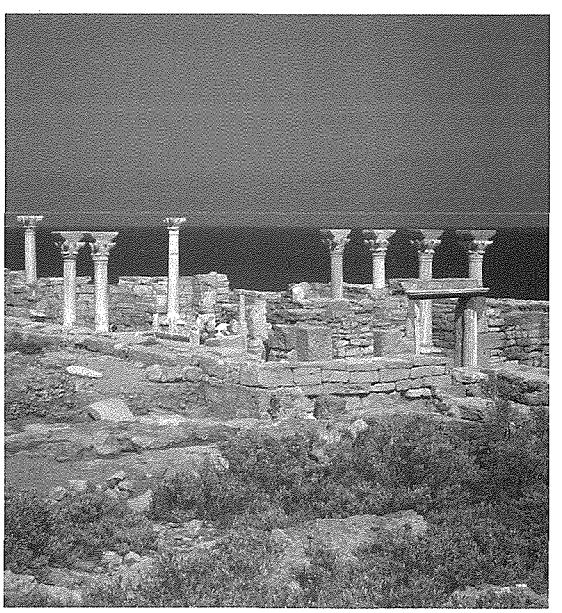
2005

SITE VISITS
Saturday, 22 January
Site visit to Ħal Millieri, led by *Prof. Anthony Bonanno*
Saturday, 05 March
Site visit to the Museum of Archaeology, Gozo, led by *Mr Stephen Cini*
28 May
Xarolla windmill, Zurrieq
Guided tour of the windmill by *Mr Sammut* followed by a tour of the catacombs on site, led by *Mr Nathaniel Cutajar*
Saturday, 19 November
Site visit to the international exhibition Crusades: Myth and Realities, at the National Museum of Archaeology, Valletta, led by *Mr Nathaniel Cutajar*, Acting Superintendent of Cultural Heritage.

LECTURES
Wednesday, 12 January
Mr Timmy Gambin
The Maritime Iconography of the Roman World
Wednesday, 16 February
Dr Martin Zammit
Kufic Inscriptions in the Maltese Islands
Wednesday, 16 March
Mr Keith Buhagiar
Cave dwelling and water management in rural late medieval Malta

19 November 2005

Wednesday, 13 April
Dr Nicholas Vella
The changing face of excavation methods
Wednesday, 11 May
Ms Suzannah Depasquale
A recent discovery at the Roman site of Ta' Ġawhar
Wednesday, 12 October
Dr Anton Bugeja
Beyond general practice: the life and times of Dr J.G. Baldacchino
Wednesday, 9 November
Seminar: The Archaeological Heritage of Marsa
Archaeological Discoveries at Marsa over the Centuries – *Dr Timmy Gambin*
Recent Archaeological Developments at Marsa – *Mr Nathaniel Cutajar*
Development Planning and Archaeology in the Marsa Area – *Mr Joe Magro Conti*
Wednesday, 14 December
Ms Patricia Camilleri and *Ms Ann Gingell Littlejohn* Discovering Libya, followed by pasta at a Valletta restaurant, for Libya tour participants and interested members and friends



14 December 2005

Comino: historical and archaeological observations

Keith Buhagiar

Introduction

Archaeological finds from Comino may not be as numerous and extensive as other discoveries made in other parts of the Maltese islands, but are still of valid importance in the reconstruction of past land use and settlement patterns. The aim of this paper is to furnish the reader with a comprehensive account of documented archaeological findings. It also attempts to investigate the land use and hydrological potential of the island in the medieval and early modern periods.

Comino is a low, relatively flat island that is strategically located between the south-eastern tip of Gozo and the northern coast of Malta. It is the third largest island in the Maltese archipelago and has a land surface area of *ca.* 2.5 square kilometres. The highest point is a mere 68.6 metres above sea level and it is separated from Malta and Gozo by narrow channels of water known as 'il-Fliegu ta' Malta' and 'il-Fliegu ta' Għawdex'. Its coast is rugged and with the exception of the inlets of San Niklaw[1] and Santa Maria to the north and the Blue Lagoon channel to the west, it lacks the shelter necessary for maritime activity (Fig. 1).

The island was formed as a result of rift faulting,[2] and three exposed strata of Upper Coralline Limestone constitute its geological stratigraphy.[3] Comino contains soil deposits of the *Terra Rossa* type and in areas not reclaimed by agriculture, garigue and steppe type habitats prevail. In the absence of Blue Clay deposits, the only natural water source available is derived from the mean sea level water table. This water source has been tapped locally since the latter half of the nineteenth century through the drilling of bore holes and underground galleries.[4]

With the exception of the church dedicated to the Holy Family on the Flight to Egypt, Wignacourt's Tower built in 1618 dedicated to St. Mary,[5] the coastal Battery on the south-east coast[6] and the former isolation hospital,[7] to the untrained eye, Comino appears devoid of past human occupation and activity. Historic sources and a systematic survey may however prove otherwise.

In his 1647 description of the island, G. F. Abela mentions the discovery of a sarcophagus, found in a small unnamed valley, which was apparently exposed by runoff surface water.[8] Other finds of probable archaeological value were the remains of ancient buildings and lead pipes and terracotta canals, which Abela associates with the passage of water in antiquity.[9] One of the major archaeological finds was accidentally made in 1912 at the east end of Santa Maria Bay and consisted of a human interment, located *ca.* 100 metres from the shore. The skeleton was covered by two portions of an amphora split vertically.[10] A photograph of the burial during excavation and a brief description of it were included in a 1915 publication by Thomas Ashby.[11] The burial was originally dated to the third century BC,[12] but its typology conforms to that of Late Roman amphorae.[13]

Prof. Temi Zammit noted surface pottery scatters which he identified as late Punic and also reported, without giving any specific location or grid reference, that several Punic tombs

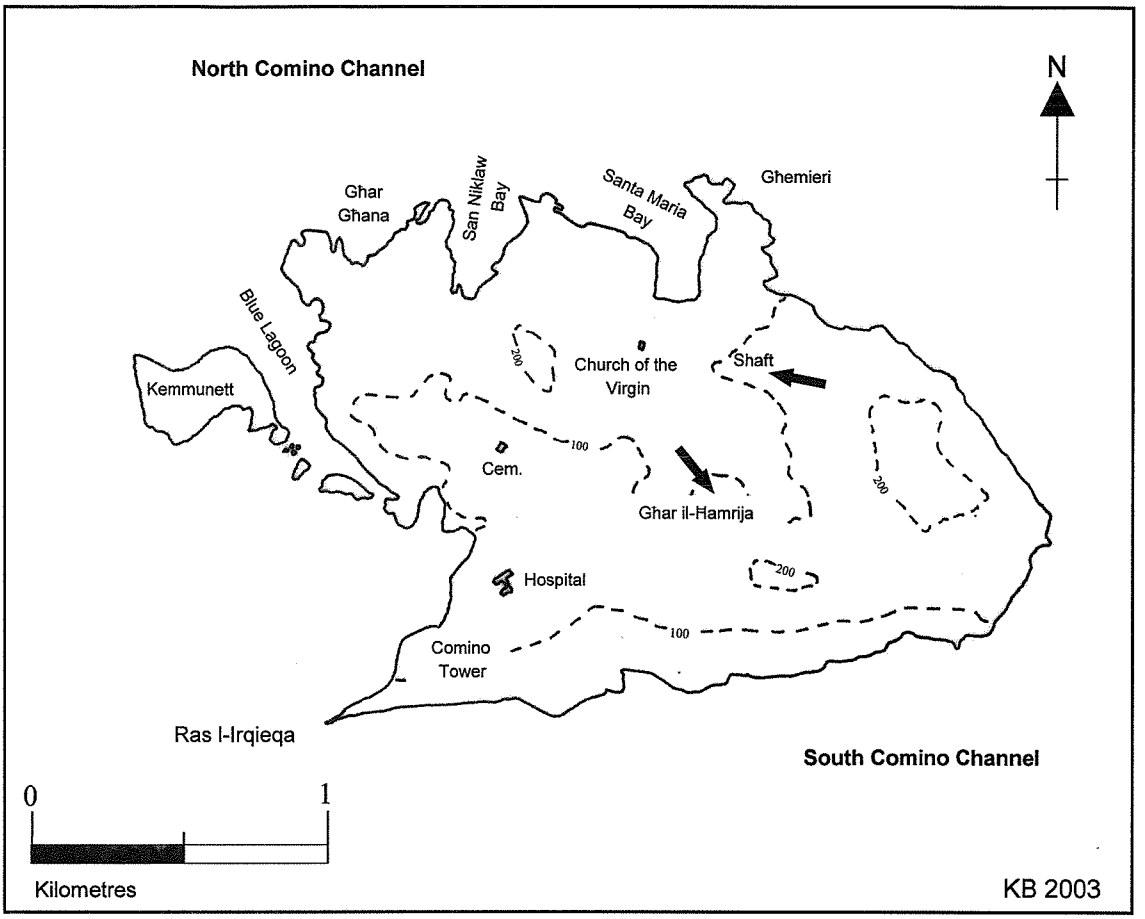


Fig. 1. General plan of Comino

could be seen at various points of the island.[14] Prof. Zammit was here possibly referring to two window-like openings (GR 3967 8543), hewn into the rock-face in the south-west face of a small valley, *ca.* 180 metres to the north-north-west of the former hospital building. Each opening gives access to a small, roughly rectangular rock-cut chamber, but no features that can be associated with a funerary practice or help to establish their date, survive. George Said-Zammit mentions the possible presence of a Late Roman or early Christian tomb in close proximity to Santa Maria Bay, but gives no grid location.[15]

Another rectangular rock-cut opening in the rock-face was noted in the Ta' l-Ifrat area close to Wied l-Aħmar (GR 4035 8567). This gives access to a small chamber, which is very similar on the interior to a Punico - Roman mortuary chamber. A wide trench fronts the entrance on the inside, and is flanked by two rock-hewn couches. Distinct sets of tool marks suggest two separate occupational phases. The earlier chamber was severely mutilated at an unknown date, but its original outline plan is still preserved in the roof. In its final stage of development, it is unlikely that this chamber had any funerary connection and function, and its resemblance to a mortuary chamber is probably a mere coincidence. Considering its close proximity to a major agricultural site, it is more likely that it was used as a recess for the storage of agricultural produce.

The Museum Annual Report for 1929 – 1930 lists the donation of a Roman oil lamp by Capt. A. Zammit Cutajar,[16] who leased the island from the Government and started an agricultural project which involved about 65 people.[17] In November of 1931, Zammit Cutajar reported that large quantities of potsherds were being dug out of the soil in a field close to Santa Maria Chapel. The finds mainly consisted of amphorae and dishes and were dated to the Roman occupation of the island. The sherds were being collected by the local inhabitants to pound into a dust known as 'deffun'.[18] Two unguentaria, three coins, one small broken jar, one early Roman lamp, three bronze coins, one stone hammer and fragments of clay amphorae, all recovered from Comino, were presented to the Museums Department.[19]

A field survey of Comino headed by Em-

manuel Anati, revealed the presence of pottery scatters in the vicinity of San Niklaw Bay. These were dated to the Borġ in-Nadur phase of the Bronze Age and the Roman – Byzantine period.[20]

Previously unrecorded finds consist of two rectangular shafts with steps cut into their narrow sides. The first shaft was discovered by the author in September 2002 and is located on high ground on the east side of Santa Maria Bay.[21] It preserves traces of plastering and paint and was hewn into the floor of an old surface quarry (Plate 1, see p. 35). The existence of a second shaft, typologically identical to the former, was recently detected in the vicinity of the Comino Helipad (GR 4123 8535) at an altitude of *ca.* 180 ft above sea level.[22] The shaft measures 1.95 m by *ca.* 0.5 m and preserves traces of a mortar rendering (Plate 2). Dug into its north-eastern side is a niche-like depression. The find still needs to be adequately surveyed and investigated, but preliminary observations show that it is of cruder workmanship and finish than the former. The shafts have been tentatively dated to the Punic period and were possibly used as places of burial.[23]

Maritime activity was made possible through the shelter provided by the bays of San Niklaw and Santa Maria, where the presence of ancient wrecks has been recorded.[24] An iron anchor was discovered in 60 feet of water, off the coast of Santa Maria Bay in 1965. It had a U-shaped ring fitted onto a bolt-hinge and had a maximum length of 1.45 metres.[25] Being the mouths of valleys, both inlets of Santa Maria and San Niklaw were subjected to a gradual siltation process that has probably changed the topography of the area significantly since Punic and Roman times. The remains of Punic amphorae dating to *ca.* 350 – 200 B.C. were identified close to the south coast of the island, east of Ras l-Irqieqa at a depth of 37 metres.[26]

Comino has been home to enigmatic historical figures. In the latter half of the thirteenth century, the Jewish mystic Abraham Abulafia of Saragoza was exiled to the island. Being a kabbalist,[27] his teachings worried both the Jewish rabbis and the Roman pontiffs of the time.[28] Abulafia called himself a Messiah and Son of God and preached Ascetism.[29] In the fifteenth century, a hermit living on Comino was frequently visited by Corrado (Kerrew), himself a hermit who resided in the vicinity of Ħondoq ir-Rummien in Qala, Gozo.[30]

The complete absence of the perched aquifer and water springs limited past agricultural activity. This study will not attempt to discuss agricultural and irrigation methods employed on Comino during the Roman and pre-Roman era. It appears that the practice of terracing the land flanking the sides of valleys is a relatively recent phenomenon and probably does not predate the Middle Ages.[31] Early modern agricultural activity seems to have been concentrated in the area surrounding Santa Maria Bay, and was probably very similar in design to the agricultural and irrigation strategies adopted by the medieval farmer.[32] The fertile valley of 'Wied l-Aħmar', south of Santa Maria Bay contains plentiful Terra Rossa soil deposits. A well developed terraced field system covers most of the valley sides, whilst the nearby natural inlet of Santa Maria allowed good communication to and from the island.

In the absence of the perched aquifer, agricultural activity on Comino was mainly dependant on rainfall and the effective collection and storage of surface runoff rainwater. This farming strategy was possibly introduced some time during the medieval period, and is similar in technique to flood irrigation systems practised in other semi-arid and arid Mediterranean regions. A series of walls in 'Wadi Mansur', Libya, dating to the first few centuries AD appear to have acted as conduits, channelling runoff water from the wadi sides downstream.[33] A similar system of floodwater irrigation in the Negev desert in Israel was discovered to allow the successful cultivation of a desert region during the rainy season.[34]

Canals on the east side of Santa Maria Bay cut parallel to the natural gradient of the land, channelled runoff surface water to a nearby underground cistern. The most fertile part of the valley was the valley bed, which was transformed and developed into a number of interconnecting fields. The selection and exploitation of this section of the island for agricultural purposes was a natural choice. An adequate water supply during the rainy season was ensured because of the natural gradient of the surrounding land, which slopes gently in the direction of Santa Maria Bay. In the absence of rainfall, water availability was en-

sured through the construction of a number of cisterns located in different sections of Wied l-Aħmar, close to the valley bed.

The above mentioned water harvesting strategies are difficult to date with any accuracy, but probably predate the agricultural impetus several areas of the island experienced in the 1930s. The success of this project appears to have relied heavily on water retrieved from the mean sea level aquifer from various bore holes dug along the side of Wied l-Aħmar. There was no knowledge of the existence of the mean sea level aquifer before the 1860s.[35]

That the area round Santa Maria Bay was the main centre of activity in the Middle Ages is also confirmed by the presence of the church dedicated to the Holy Family on the Flight to Egypt, located on the west side of the bay. It is one of the earliest surviving rural churches in the Maltese islands and is first mentioned in a 1296 text.[36] The church of Santa Maria was subject to a number of subsequent alterations, but like other medieval masonry built churches in the Maltese countryside, it appears to have consisted of a one cell building, constructed entirely out of stone with a cylindrical apse at its east end. Excluding the slight pitch of the roof, the original structure probably had severe box-like proportions.[37] The chancel and the apse were cut off from the rest of the church by a wooden screen, a feature that was present in other late medieval churches of Malta.[38]

Located on high ground behind the church of the Holy Family, commanding a good view of the underlying fields and Santa Maria Bay (Plate 3), a series of three dry-stone wall rectangular-shaped enclosures front the entrance to two man-made caves[39] dug into a Tal-Pitkal member deposit (Fig. 2). Both chambers are cut into the face of a disused surface quarry of unknown antiquity, and their archaeological potential and value has previously never been considered. Only the scale drawing of the larger cave could be produced (Fig. 3). To the south-east of its entrance is a smaller rock-cut chamber fronted by a dry-stone wall enclosure. Dense fig tree growth makes this area inaccessible, and prohibits the survey of this small chamber (Plate 4). Its interior contains two distinct sets of tool marks, which show that it was enlarged at an unknown date, but its original purpose and function are difficult to determine.

The larger cave (Fig. 3 a) is accessed through a low square-headed doorway, the west end of which is flanked by a dry-stone wall (Plate 5). The cave is known as Għar il-Ħamrija[40] and has an interior floor level that is *ca.* 1 metre lower than the exterior. In its last phase of occupation the cave was internally partitioned into three separate chambers by

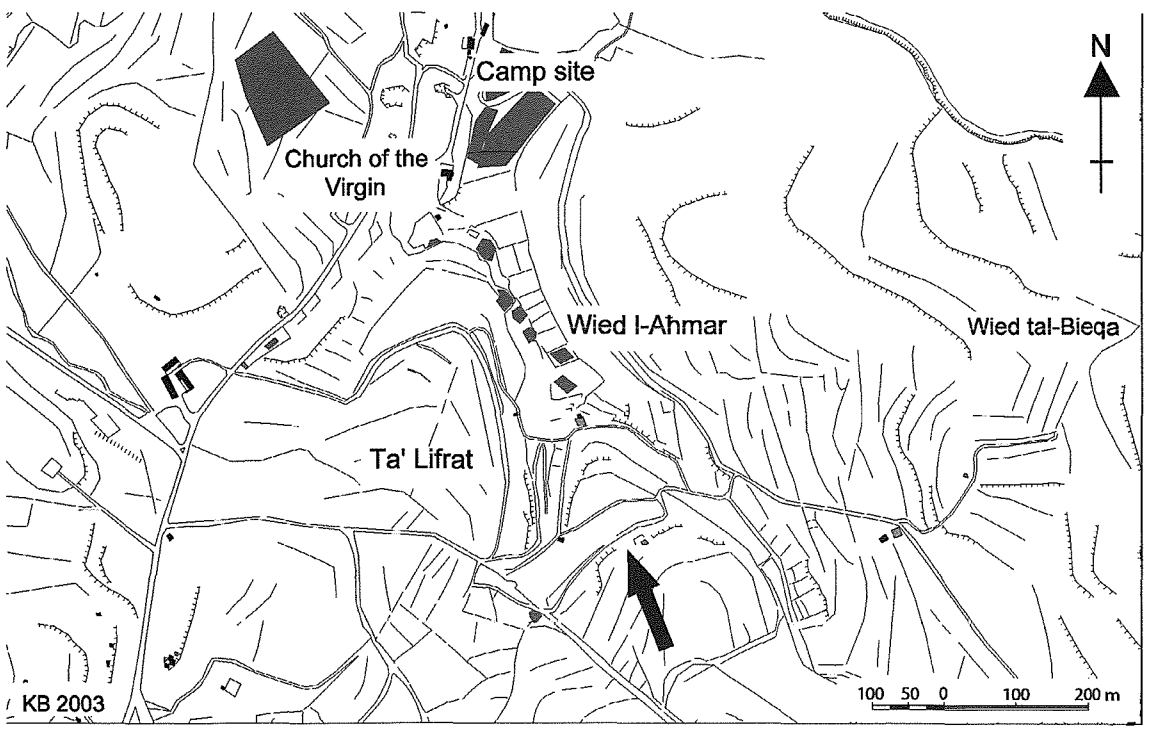


Fig. 2. Map detail showing location of Għar il-Ħamrija, Comino

means of dry-stone walls. A series of troughs hewn into the south wall are indicative of the cave's use as an animal pen (Fig. 3 d). The use of an almost circular shaft in the roof of the cave, which flanks the east jamb of the doorway is unknown (Fig. 3 c), but could have possibly functioned as (a) a ventilation hole aimed at allowing the dispersal of smoke generated by an underlying hearth or (b) a shaft through which manure could be lifted and dispersed in the overlying fields.

Three different sets of well defined tool marks are preserved on the rock walls and roof, and indicate that the cave experienced an organic type of development. The plan of the original chamber survives in the cave roof. It had smaller proportions, was roughly oval in shape and its roof recalls a barrel-shaped ceiling (Fig. 3 f). It was finished to such a high degree of refinement that tool marks are barely visible (Plate 6).

Three Latin-type crosses (Plate 7) are carved into the south, west and east sides of the roof (Fig. 3 e). A linear decorative band, located below the Latin-type crosses appears to have encompassed the whole vertical wall-section of the cave. This effect was achieved by receding the rock-wall by a few centimetres inwards from the overlying barrel vaulted ceiling.

A corridor (Fig. 3 g), cut into the west wall, appears to be a later addition. In its final phases of occupation the west and east rock-walls were re-shaped into apse-like chambers, the access to which was partly screened by dry-stone walls. The south wall was receded inwards by a few metres. The tool marks representing this final occupational phase are coarser and deeper and are easily distinguishable from the finer tool marks that characterise the extent of the original cave.

The cave appears to have a long history. Its location, interior plan and refinement strongly

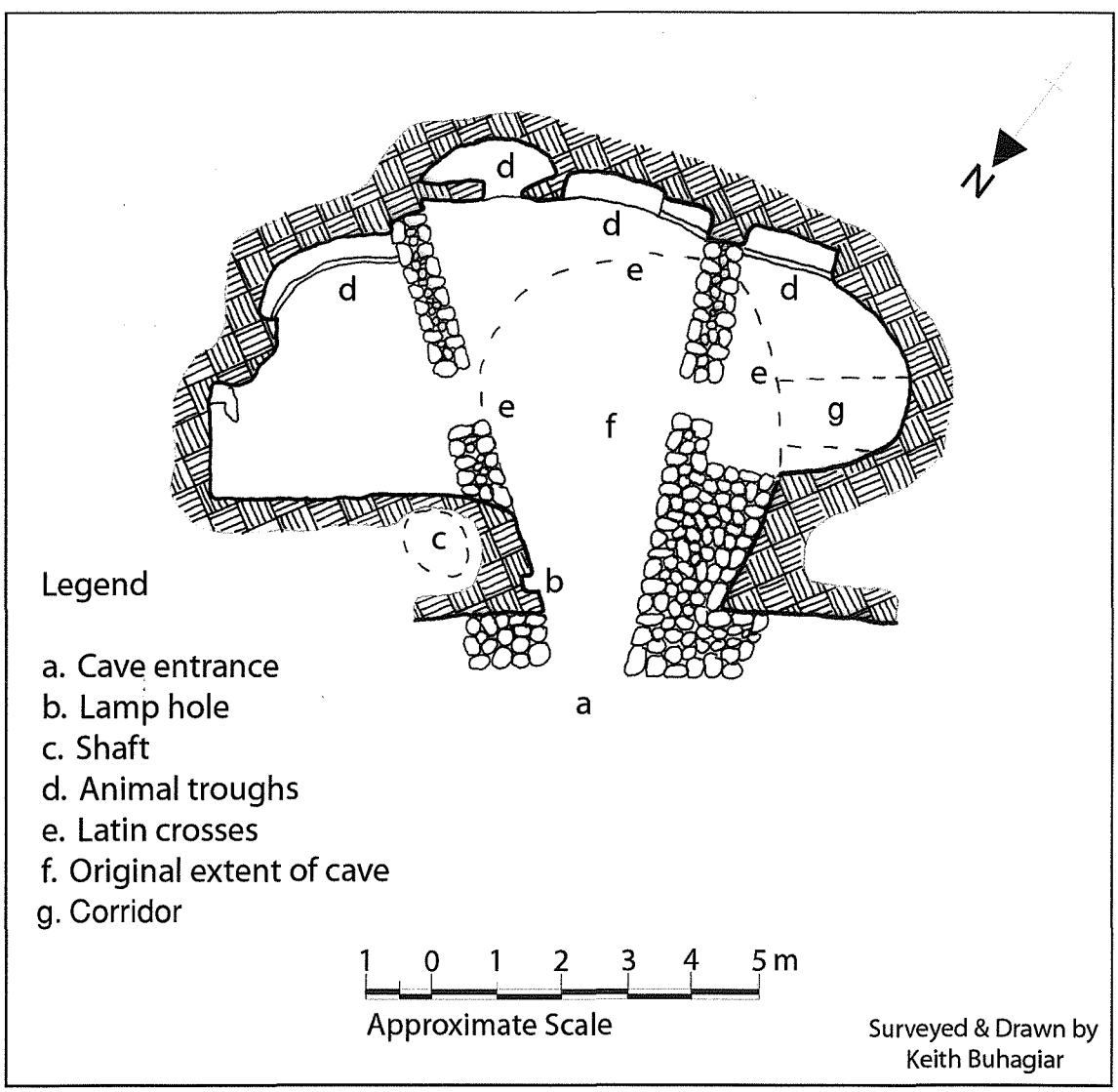


Fig. 3. Plan of Għar il-Ħamrija which overlooks Wied l-Aħmar and Santa Marija Bay

suggest the possibility that the cave originally served as a cave-church. Maltese cave-churches can be divided into two categories: the urban and the rural.[41] Cave-churches still in use in 1575 were recorded and described by the Apostolic delegate, Mgr. Pietro Dusina.[42] Urban churches were often located within the precincts of palaeochristian hypogea and generally show a greater preoccupation with architectural elaboration and enhancement than their rural counterparts.[43] The rural churches are generally smaller in size and display a lesser degree of architectural sophistication. Various cave-churches of this type survive in Malta, the most important being the cave-church dedicated to St. Nicholas in Mellieħa,[44] a reference to which is included in the 1575 Dusina report.[45] The rock-walls of several cave-churches were plastered and covered with wall-paintings. Rock-cut churches were common in the Byzantine world and it is probable that this tradition reached Malta from Southern Italy and neighbouring Sicily.[46]

The cave's architecture and setting share close ties with other rural cave-churches in Malta, the majority of which are located on high ground and command unobstructed views of the underlying fertile land. They are small in nature and were located in areas where the spiritual needs of the isolated rural communities would be otherwise difficult to administer. Even though not comparable in architectural refinement to the urban cave-churches, their interior is still more refined and elaborately finished than any adjoining troglodytic dwellings and animal pens, even when hewn into a hard Upper Coralline deposit. The majority of the identified rural cave-churches in Malta are of the cliff-face type,[47] but the lack of such an accessible landscape on Comino was probably an important factor in determining the cave's location.

Conclusions

The dearth of physical evidence for the presence of ancient structures might be partly due to the limited availability of natural resources on the island. It would have been less costly and less labour intensive for occupants to reutilise already extant ashlar masonry, rather than quarry or import materials from the mainland. It is also likely that only a fraction of the finds made on Comino were reported to the Museums Department and important archaeological evidence has been irreversibly lost. This study highlights the archaeological potential of the island, but needs to be followed by a systematic field survey which will perhaps lead to the identification of other archaeologically sensitive areas.

Acknowledgements

Acknowledgements are due to Prof. Anthony Bonanno, Prof. Mario Buhagiar, and Dr Claudia Sagona for viewing an earlier version of the text and to Dr Nicholas C. Vella, Dr Timothy Gambin and Dr Anton Bugeja for kindly forwarding some of the references.

Notes

1 Popular belief states that San Niklaw bay got its name from a church dedicated to Saint Nicholas which was located close by. See G. F. Abela, *Della Descrittione di Malta*, (Malta. 1647), 124.

2 H. Bowen-Jones, J. C. Dewdney & W. B. Fisher, *Malta – Background for Development*, (Durham, 1962), 34 – 42; M. Pedley, M. H. Clarke & P. Galea, *Limestone Isles in a Crystal Sea – The Geology of the Maltese Islands*, (Malta. 2002), 13 - 22.

3 The stratified rock sequence starting form top to bottom is (i) Tal-Pitkal Member, which is exposed throughout most of the island, the (ii) Ġebel Imbark Member, exposed outcrops of which are present in the western, southern and eastern sections and the (iii) Mtarfa Member, which lies only exposed in a small area south of Santa Maria Bay. See G. Debono & S. Xerri, *Geological Map of the Maltese Islands, Gozo and Comino – Sheet 2*, Oil Exploration Directorate, (Malta. 1993).

4 Water Services Corporation – Institute of Water Technology. See also T. O. Morris, *The Water Supply Resources of Malta*, (Malta. 1952), 8 – 12.

5 Abela, 124. See also A. Gauci, *Gozo – A historical and tourist guide to the island*, (Malta. 1969), 114 – 115.

6 The building of St. Mary's Battery commenced in 1714, but in 1715 it was relocated to its present site. See S. C. Spiteri, *Fortresses of the Cross*, (Malta. 1994), 537. See also R. Farrugia Randon & S. Farrugia Randon, *Comino, Filfla and St. Paul's Island*, (Malta. 1993), 5.

7 The isolation hospital was an extension of a building called 'Il-Palazz' which was originally constructed by Grand Master Wignacourt. The Hospital was opened some time before 1912 for the treatment of patients suffering from the plague and cholera. See Farrugia Randon & Farrugia Randon, 6 – 7. See also C. J. Boffa, *The Islets of Comino and Filfla*, (Malta. 1966), 21 – 22.

8 Abela, 125. By 'sepolcro di creta cotta', Abela is probably referring to a clay sarcophagus. In an article

on *The Sunday Times* [Malta] of 31st August, 1958 entitled 'An Archaeological Glimpse of Comino', J. Bezzina stated that the sarcophagus was discovered in 1640 in Wied Ernu, but no reference to this source of information is given. See also Gauci, 115.

9 Abela, 125. See also O. Bres, *Malta Antica Illustrata co' Monumenti e coll'Istoria*, (Rome. 1816), 63.

10 *Museum Annual Report* 1911–1912, section E, 4. The amphora burial is on display in the Gozo Archaeology Museum.

11 T. Ashby, 'Roman Malta', in *Journal of Roman Studies*, (1915), 51 – 52.

12 N. Tagliaferro, 'Archaeological Discoveries in Malta during the year 1911 – 12', in *Archivum Melitense*, vol. II, (1912 – 1913), 69 – 70.

13 As generously pointed out by Prof. A. Bonanno.

14 *Museum Annual Report* 1911-1912, 4, 13.

15 G. Said-Zammit, *Population, Land Use and Settlement on Punic Malta – A Contextual Analysis of the Burial Evidence*, BAR International Series 682, (Oxford. Archaeopress, 1997), 4.

16 *Museum Annual Report* 1929 – 30, 1.

17 Farrugia Randon & Farrugia Randon, 7.

18 'Roman Potsherds at Comino Island', in *Museum Annual Report* 1931 – 1932, iv.

19 *Museum Annual Report* 1931 – 1932, i.

20 F. Fedele, 'Prospezioni orientative condotte nel Settembre 1987', in A. F. Anati & E. Anati (eds.), *Missione A Malta – Ricerche e Studi Sulla Preistoria Dell'Archipelago Maltese Nel Contesto Mediterraneo*, (Rome. 1988), 193.

21 K. Buhagiar & C. Sagona, 'New archaeological find on the island of Comino in the Maltese Archipelago', in *Ancient Near Eastern Studies*, vol. XL, (2003), 160 – 172.

22 The shaft was detected in November 2005 by Joseph Gilson and David Mizzi fsc who generously accompanied the author on a visit to the site.

23 Buhagiar & Sagona, 160 – 172.

24 Personal communication by Dr Timothy Gambin.

25 *Museum Annual Report* 1965, 5.

26 A. J. Parker, *Shipwrecks of the Mediterranean and the Roman Provinces*, BAR International Series, (Oxford. 1992), 153.

27 Kabbala is in essence esoteric Jewish mysticism as it appeared from the twelfth centuries onwards. Observance of the Law of Moses remained the basic tenet of Judaism, but Kabbala provided a means of approaching God directly, thus providing a religious dimension to Judaism whose mystical approaches to God were viewed by some as being heretical and pantheistic.

28 G. Wettinger, *The Jews of Malta in the Late Middle Ages*, (Malta. 1985), 6.

29 Farrugia Randon & Farrugia Randon, 3.

30 Ibid., 3.

31 A. Bonanno, 'L'habitat maltese in età romana', in *Kokalos*, 22-23, (1976 – 77), 392 – 394.

32 For information on agriculture in late medieval Malta see G. Wettinger, 'Agriculture in Malta in the Late Middle Ages', in *Proceedings of History Week 1981*, (Malta. 1982), 1 – 48.

33 D. D. Gilbertson & C. O. Hunt, 'Romano-Libyan agriculture: walls and flood water farming', in Graeme Barker (ed.), *Farming the Desert – The UNESCO Libyan Valleys Archaeological Survey*, vol. I, (London 1996), 200.

34 H. J. Bruins, *Desert Environment and Agriculture in the Central Negev and Kadesh-Barnea during Historical Times*, (Netherlands. 1986), 3.

35 Morris, 5.

36 B. Motzo, *Il Compasso da Navigare; opera italiana della metà del secolo XIII*, (Cagliari. 1947), 111. See also A. Ferris, *Descrizione delle chiese di Malta e Gozo*, (Malta. 1985), 608 – 609.

37 M. Buhagiar, 'The First Christian Churches in Malta', in *Treasures of Malta*, vol. v, no. 2, (Malta. 1999), 50.

38 M. Buhagiar, "Medieval Churches in Malta", in A. Luttrell (ed.), *Medieval Malta – Studies on Malta before the Knights*, (London. 1975), 169 – 170.

39 The location of these caves was shown to the author by Dr Edgar Depasquale.

40 Personal communication by Alex Camilleri.

41 M. Buhagiar, *The Christianisation of Malta: catacombs, cult centres and churches in Malta to 1530*, BAR International Series 1674 (Oxford. Archaeopress, 2007), 96 – 103.

42 For a reproduction of the Dusina visitation report see G. Aquilina & S. Fiorini, *Documentary Sources of Maltese History, Part IV – Documents at the Vatican, Malta: Visita Apostolica no. 51, Mgr Petrus Dusina, 1575*, (Malta. 2001).

43 Buhagiar (2007), 98 - 103

44 K. Buhagiar, 'The San Niklaw Cave-Settlement', in *Melita Historica*, vol. xii, no. 2, (1997), 131 – 137.

45 Aquilina & Fiorini, 187 - 188.

46 Buhagiar (1975), 164. See also A. Messina, *Le Chiese Rupestri del Siracusano*, (Palermo. 1979); and id., 'Troglodismo Medievale a Malta', in *Melita Historica*, vol. x, no. 2, (1989), 109 – 120.

47 The author has classified cave-settlements into two main typologies: (1) karst feature settlements, which consist of natural depressions in the ground, some of which were adopted for use as settlements and (2) cliff-face settlements. The latter consisted of a series of caves which were hewn into the cliff-face. See K. Buhagiar, *Medieval and Early Modern Cave-Settlements and Water Galleries in North-West Malta South of the Great Fault – A Field Survey and Gazetteer*, (unpublished Master's thesis, University of Malta, 2002), 48.

Tobacco pipes from an underwater excavation at the quarantine harbour, Malta

John Wood

Introduction

Quarantine, from the French for 'forty days', was an extension of the original *trentina*, the thirty days confinement first implemented at Venice when its inhabitants suffered bubonic plague in 1348.[1] Originally the word 'lazaretto' meant an institution for the care and segregation of lepers, leprosy being the particular concern of Saint Lazarus. In due course it came to mean a place of isolation for people with infectious diseases. A quarantine system which originated in the Mediterranean remained almost entirely confined there until the first half of the 19th century.

Quarantine in Malta

Quarantine measures had been enforced in Malta since the Middle Ages.[2] When the Knights of Saint John came to Malta in 1530 they applied the quarantine laws and procedures which they had evolved during their stay in Rhodes. Infected vessels were allowed to anchor only in specified areas of the harbour. In rough weather they were permitted to moor off the 'post of Castille' in Grand Harbour or behind Senglea near Kordin. In fair weather they went to Marsamxett. Clean ships did eighteen days quarantine, infected ships might do eighty. In 1592 galleys of the Grand Duke of Tuscany brought plague from Egypt. During that plague a temporary lazaretto was erected on Bishop's Island in Marsamxett harbour.[3] In 1643 Grand Master Lascaris built the first permanent spacious lazaretto on the island to house ships' crews, voyagers, merchandise and cattle, as a first line of defence against cholera and plague. Subsequently the island was called Manoel after Grand Master Anton Manoel de Vilhena.

In fact in the Mediterranean between 1600 and 1650 only thirteen years were plague free, and between 1650 and 1700 the figure was down to seven.[4] In the 1676 plague, orders were issued to transport all patients to the lazaretto and to two magazines situated in Fort St Elmo. Suspected cases were taken aboard ships anchored in Marsamxett with the aim of keeping them under observation for forty days. Sometimes plague broke out among them and they all died.[5] Following these outbreaks the Marsamxett facilities were successively improved by Grand Masters Cotoner, Caraffa and Manoel de Vilhena.[6] By 1774, at the time of Ximenes de Texada's customs house, warehousing facilities were provided on the Mar-

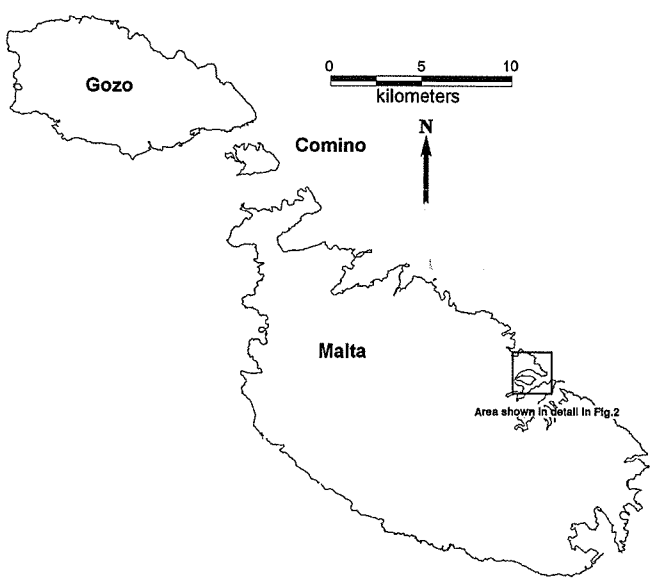


Fig. 1. Map of Malta

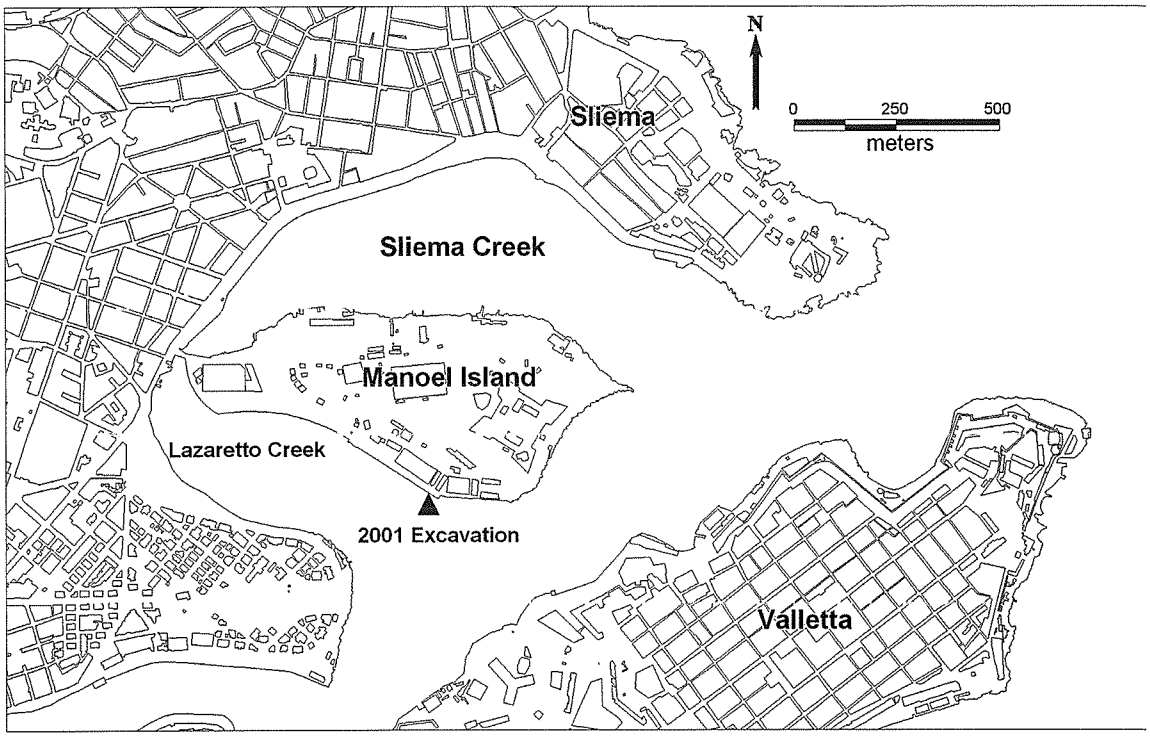


Fig. 2. Map detail showing area of excavation

samxett side of Valletta for merchandise to be stored in quarantine.[7] Ships with foul bills of health were sometimes moored at Ta' Xbiex. Ships on short quarantine lay under Sa Maison bastion in Marsamxett. For heavy ships unable to enter Marsamxett in rough weather a branch of the quarantine office existed in Grand Harbour under Kordin.[8] In the 1830s, when normal facilities were stretched, Fort Ricasoli was adapted as a temporary quarantine.[9] Later in the decade (1837-38) the Manoel lazaretto was enlarged and a plague hospital was built at its western end. It subsequently served as an isolation hospital for the whole island.

Malta had an international reputation as an excellent quarantine station. In June 1784 a Maltese vessel suspected of being infected was destroyed by fire with all goods on board after her crew and passengers were ordered to strip naked and wash themselves in seawater before being taken to the lazaretto.[10]

In times of pestilence letters and papers were fumigated by sprinkling them with vinegar then smoking well with sulphur. In the Malta lazaretto a particular composition was commonly used: Sulphur six pounds, Orpiment, crude Antimony, Lytharge, Cumin seeds, Euphorbium, Black pepper, Ginger, of each four pounds, Asafoetida, Cinnabar, Sal Armoniac (sic) of each three pounds, Arsenic one pound. To these ingredients, first reduced to powder were added raspings of pine wood

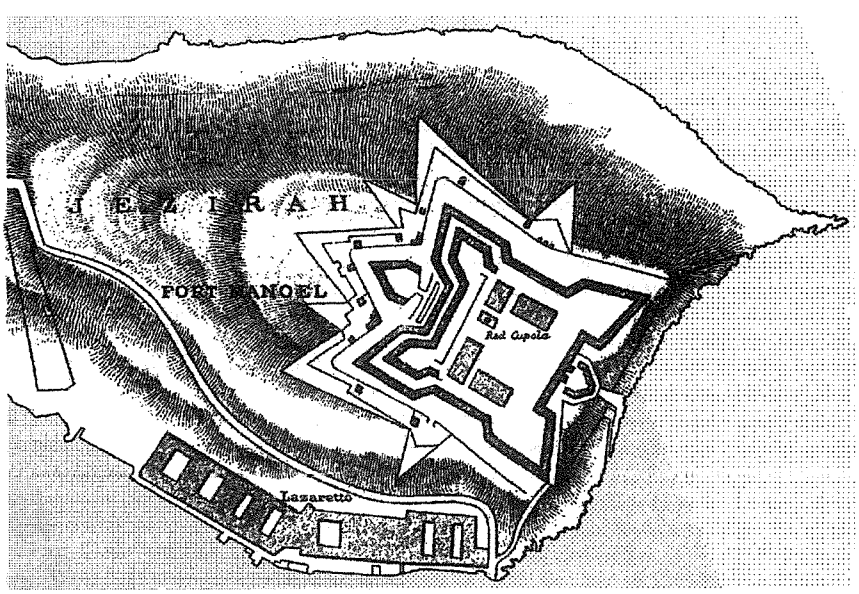


Fig. 3. Fort Manoel and the Lazaretto

six pounds, and bran fifty pounds. It was better to use a smoking box.[11] By 1810 merchandise was smoked and aired, letters slit open and fumigated and papers handled with iron tongs before being given a bath in vinegar.[12] Even in 1813-14 the medical treatment of plague was dismissed as useless, but orally administered preventatives such as verbena, calendula, ruta leaves and wine infusion of rosemary, were being recommended. Fumigation with nitric and sulphuric acids was used in hospitals; the smoke of straw and the fumes of vinegar were also used. Tobacco leaves were placed between the fingers of the attendants and the wrists of the patients to avoid catching the disease.[13] Between 1810 and 1832 an average of eight to ten hundred individuals passed through the quarantine annually.[14] From 1829 registers were kept of persons undergoing quarantine at the lazaretto.[15]

Entries in Lloyd Maltese shipping registers give some idea of a continuing plague problem. 1816, entry 15 March – arrived on 09 March HMS Castor with the plague. 1843, entry 14 June – English brig *Romance*, Turkish brig *Mabrook* with plague from Alexandria.[16]

From 1841 persons undergoing quarantine in the lazaretto had to pay at the rate of 2 shillings and 6 pence for each guardian employed, although no single individual was to be charged with more than 1 shilling and threepence a day.

Site Description

This excavation was carried out in an area earmarked for development just off the lazaretto on Manoel Island in Marsamxett harbour (Figs. 2 and 3), between 22 and 29 June 2001.[17]

The topography of the seabed consists of a steep slope descending from 4 to 27m at an angle of 55 degrees, values approximate. The top of the slope is littered with war damaged and discarded worked stone blocks (some of archaeological value) and a variety of debris.

The main sediment consists of a mixture of grey silt and sand.

Artefacts recovered ranged in date from before the era of the Knights of Saint John to Royal Naval issues (1530-1930). Seaweed and silt were removed from the artefacts before desalination.

Catalogue

35 of the 42 pipes are stylistically Ottoman *chibouks* – ceramic bowls which would have had perishable reed or wooden stems. The other 7 fragments have origins in northern Europe.

Abbreviations in dimension are: D diameter, L length, W width, RD rim diameter and TD termination diameter.

QH002 Flared rim and rounded bowl with a keel joint to the shank, this latter feature is incomplete. Brownish red clay. Incised line around the waist. The bowl has a group of 3 haphazardly indented rings on either side, close to the shank end. Where the bowl and keel meet the junction is decorated with a line of semaphore dashes. 18th or early 19th century.[18]

QH006 Sack-shaped bowl with complete shank. Mould made in reddish brown clay with black slipped appearance. Where the shank joins the bowl a vaguely scribed line gives the appearance of a keel. The shank end is plainly rounded with a 10mm opening. There are traces of lumpy decoration on the lower bowl. Similar to QH061 and a number of other pipes from an excavation at Birgu.[19] 18th - 19th century.

QH007 Fragment of a bowl and rim. Most of the rim and the entire shank are missing. The damage reveals a 6mm opening where the stem would join the bowl. There is a 3 hole grate between the bowl and rim. Sepia to dark brown clay. One of a group of 9 Venetian pipes categorised as 'Al Tornio' and dated 1670-1750 by Boscolo.[20] These pipes are thrown on the potter's wheel in 3 sections: rim, bowl and shank. They were possibly made in Rovigo, a pottery centre south of the city.[21]

QH008 Rounded bowl with squat rim. A keel connects the bowl and shank. The artefact is mould made of a greyish fabric, piebald brown. Both bowl and shank are incomplete. Shank opening 7mm. There is rouletted decoration around the ringed termination and between rim and bowl. The bowl has a double incised line around the middle and a rope like decoration at the junction with the keel. All features are abraded. Late 17th or early 18th century.

QH020 Flat base bowl with fragments of rim and shank. Pale terracotta clay, undecorated, abraded. 3 hole grate at base of rim. Similar to QH007. Venetian 1670-1750.

QH021 Bowl, shank and turned rim. Rim incomplete, 3 hole grate at bowl to rim joint. 10mm shank opening. Dark brown clay. Similar to QH007,020. Venetian 1670-1750.

QH022 1 Large and 2 small fragments of a squashed and bulbous bowl. All 3 fragments form part of the bowl. The large fragment has bits of the rim and remnants of a slug shaped keel. Charcoal grey clay. Heavy rouletting on bowl to keel joint. Rouletted with a lighter touch at rim base.

QH023 Bowl with fragmented rim and shank. The bowl is gadrooned and has a 7mm disc impressed under the base. Double rouletted band between bowl and plain rim. Yellow clay with traces of yellow ochre glaze.

QH024 Bowl, shank and rim fragment. 9mm shank opening. Rouletting around shank and termination. The termination also has a ring of gadrooning on the widest part. The rim has a distinct lip, otherwise plain, over a bowl of imitation basketwork. Yellow clay with traces of ochre glaze. 18th - 19th century.

QH025 Shank and bowl with large fragment of rim. The rim fragment has a 3 hole grate at its base. This fragment, found in two pieces, had been glued together after excavation. Shank opening 10mm. Yellowish pink clay with faint traces of 'gold' spots over the entire artefact.

Clays found in the Po valley, a few kilometres south of Venice, contain a yellow-brown mica giving an overall silvery effect when fired. A method used by older generations to rejuvenate their foul pipes involved placing the artefact in ash under a blazing fire. When the fireplace subsequently cooled and the ashes were raked out the ceramic had a golden, rather than silvery sparkle. This reaction was recently verified by experiment.[22]

QH027 Fragment of European style bowl. Probably ball-clay but heavily stained to rust brown. The seam away from the smoker has a vertical branch of broad leaves and an inverted horseshoe on the right side of the bowl. A similar pattern was produced by McDougalls of Glasgow circa 1870 or later.

QH029 Round bowl, vertical rim. The short shank has a keel joint and swollen end with an 8mm opening. A fine, almost delicate piece in dull black clay. Half of the rim and part of the termination is missing. 18th century.

QH036 Round bowl, vertical rim. The short shank has a keel joint and swollen end with an 8mm opening. Mid grey clay. Part of the upper rim is missing. The rim is horizontally ribbed and has a rope like decoration where it meets the bowl. There is a broad band of rouletting under the stepped termination to emphasise the junction of keel and bowl. 18th century.

QH042 Shank and fragment of rounded bowl. Rim missing. Dark brown clay. The bowl has a lattice pattern over two incised lines. Double incised lines accentuate keel to bowl joint. Band of rouletting under the swollen shank end. 9mm opening. 18th century.

QH045 A squat bowl with rim fragment, keel joint, shank and stepped termination. The latter feature too damaged to measure the opening. Yellowish clay. Rouletted decoration around the termination and shank end, also incised lines around the shank. A hollow line divides rim from bowl. The bowl has a chunky band of rope-like decoration around the middle and a finer twist where bowl and keel meet. 18th century.

QH047 Bowl with slightly tapering rim fragment. Keel joint, stub ended swollen termination. 10mm opening. Brown clay possibly dipped in chocolate coloured slip, then burnished. 18th century.

QH048 Round bowl with slightly flaring rim. Keel joint to flared shank with stepped termination. Light terracotta clay with pinky red paint, glaze or slip. The incomplete rim fragment was found in four pieces and had been glued together after excavation. At the base are two bands of incised lines with rouletting

between. The bowl is deeply gadrooned with vertical rouletting in the hollows. Under the right side of the shank is a 4mm impressed circle with a raised dot in the middle and 7 dots raised in a ring around the centre. This is possibly a maker's mark. Similar 7 and 8 dot stamps were found on 18th century pipes in the neighbourhood of Jerusalem.[23]

QH049 Rim fragment with 3 hole grate. Light brown clay with traces of gold speckle. A hand thrown Venetian rim in 'Al Tornio' style. 1670-1750.

QH054 Flat base bowl with shank and fragmentary rim. Grey clay. The bowl is heavily impressed with vertical equilateral triangles, deeper at the apex, above and below the triangles is heavy horizontal rouletting. The shank has a stepped termination decorated in gadroons. 7mm opening. On the flat base is a crudely impressed cross with a capital Y impressed obliquely in each section. Flat base pipes frequently have a continuous lip. Possibly an apprentice piece. 19th century.

QH055 Mould made disc-based bowl and shank. Black clay with patchy marine concretion. Most of rim missing. Bowl and stepped termination both gadrooned. Shank opening 8mm. Keel ending square under bowl. Robinson (1985)[24] says the keel may be thus modified from the late 18th century through the 19th century.

QH061 Mould made sack-like bowl with damaged rim. Black clay. The swollen ended shank terminates in a 10mm opening. An abraded 'bunch of grapes' decorates the bowl. There are 10 comparable pipes from an excavation in Malta[25] and, without provenance, 2 in the reserve collection of the Archaeological Museum in Gozo.[26] 18th – 19th century.

QH062 Shank fragment. 10mm opening. Light creamy body. Bands of rouletting decorate the stepped termination. Abraded.

QH063 Mould made pipe in light pink clay. Round bowl with slightly flaring rim, keel joint, shank and termination. Bowl and shank end are gadrooned. Incised lines accentuate the keel joint. The whole is glazed olive to brown apart from the lip of the rim and some worn patches around the bowl. Glazed pipes are relatively rare. Splash glazes have been noted in Israel, Lebanon and Yemen.[27] In Tunis a few blue and white glazed pipes were produced, almost certainly at the Qallaline factory where other domestic wares were being produced.[28] Robinson (1985)[29] published 4 from Corinth, speculating 'they may be a local Corinthian product,' although 'pipes with green and yellow glaze do occur in late 17th century Poland.' Bikic has recorded green glazed pipes in Belgrade, Serbia, attributed to the 17th century.[30]

QH080 Stem fragment of European pipe. White clay stained brown. 1.5mm bore. 19th century.

QH093 European pipe. Stem incomplete. Pipeclay stained chestnut brown. Bowl opening 19.5mm just out of symmetry. 1.5mm bore. The bowl has arabesque and arched ribbed decoration. The left hand stem has 2 illegible characters (Mc?) then DOUGALL and GLASGOW on the reverse. Duncan McDougall & Co. operated from 1846-1967. They were one of the largest pipe manufacturers in UK and exported their product in huge numbers. Late 19th century.

QH104 Bowl and shank fragment. Most of rim missing. Yellowish brown clay with red brown stain possibly caused by the marine environment. The bowl has neatly incised flutes under a band of rouletting. Under the bowl is a square ended keel delineated by incised lines containing a broad band of rouletting. There is also a band of rouletting around the upper junction of bowl and shank and around either side of a swollen termination. Shank opening 15mm. On the underside of the keel is a 5mm diameter maker's mark impressed with Arabic characters. Makers' seals which rarely occur in the Ottoman factories before the 18th century are almost universal by the 19th. They are sometimes meaningless imitations of an Arabic monogram.[31]

QH180 Fragment of egg-shaped bowl with vestigial shank. Brown body with red stains. There is a pronounced and carefully delineated keel with a diagonally incised 'chin strap'. A

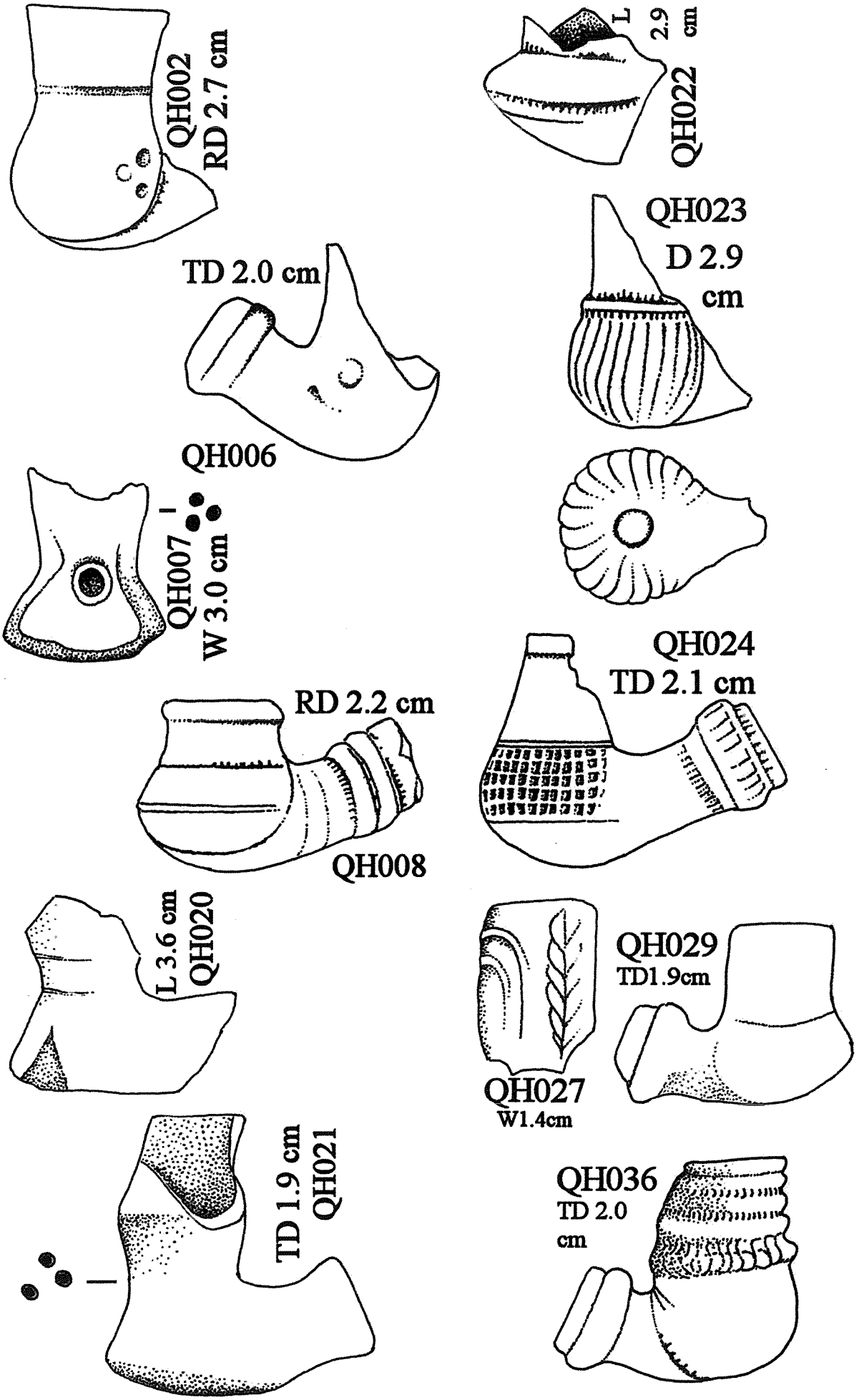
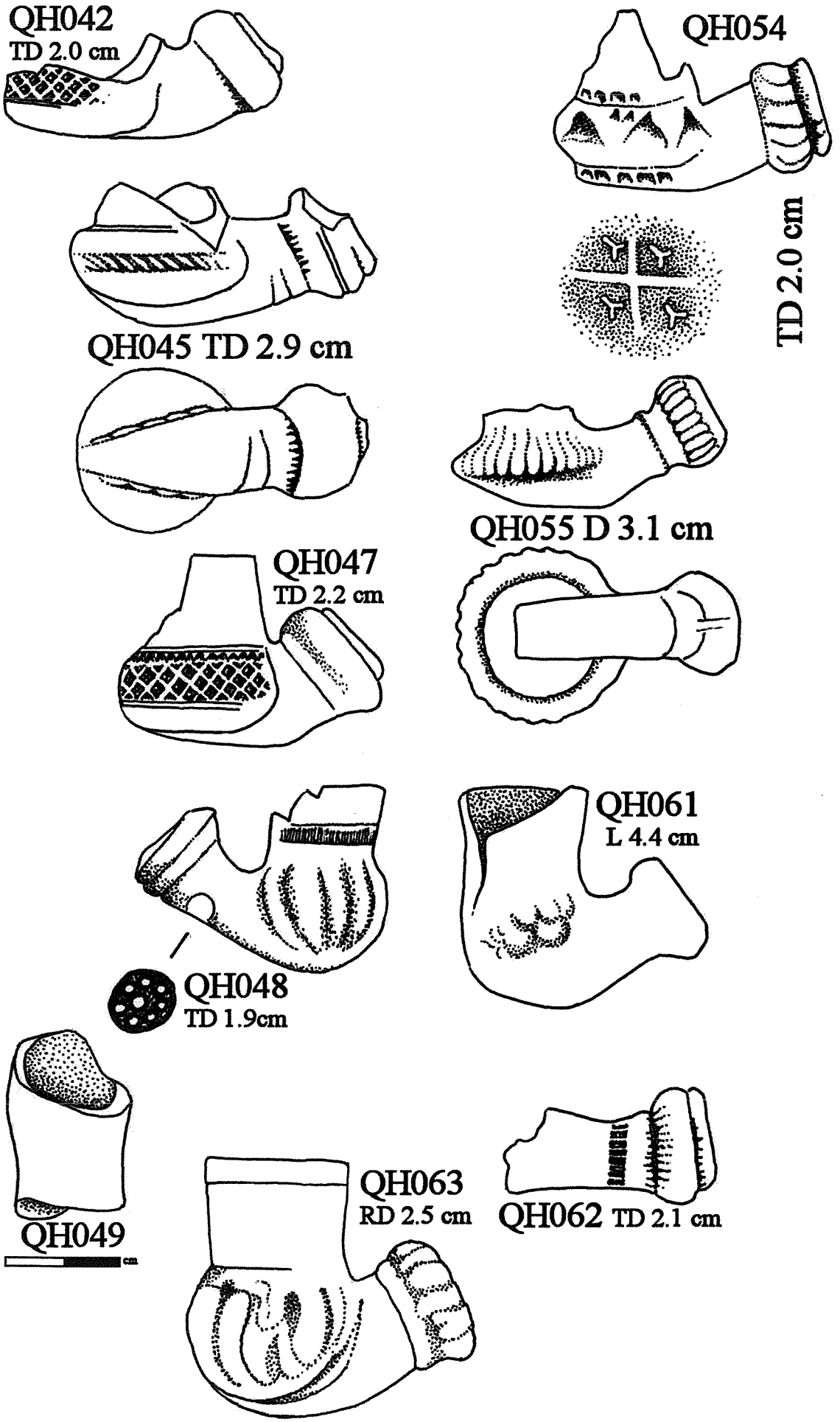
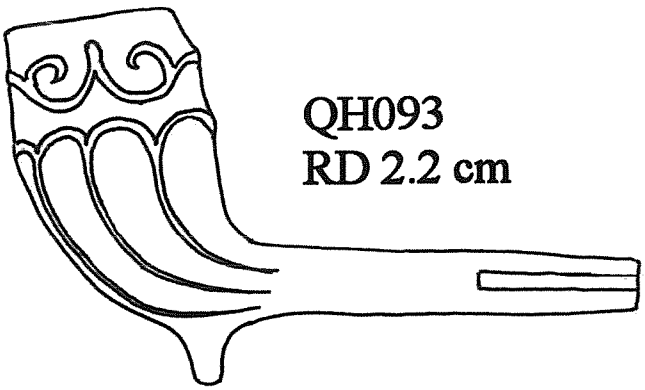


Fig. 4. Tobacco pipes from European and Ottoman sources, found at the Lazaretto excavation

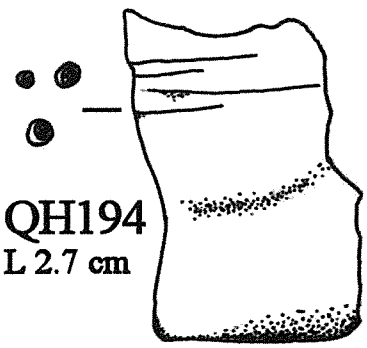

QH042
TD 2.0 cm
QH054
TD 2.0 cm
QH045 TD 2.9 cm
QH055 D 3.1 cm
QH047
TD 2.2 cm
QH061
L 4.4 cm
QH048
TD 1.9cm
QH049
QH063
RD 2.5 cm
QH062 TD 2.1 cm

QH080

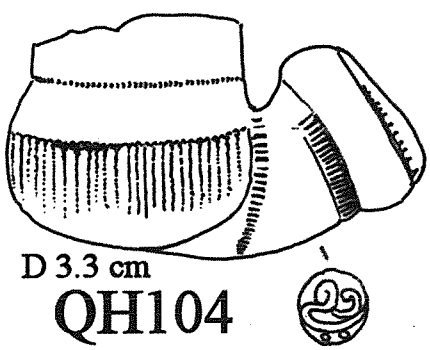
QH193
TD 2.0 cm



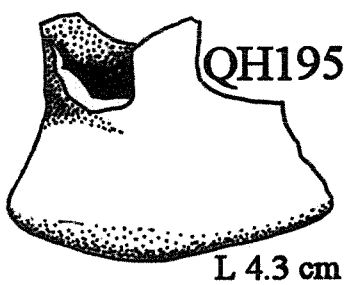
QH093
RD 2.2 cm



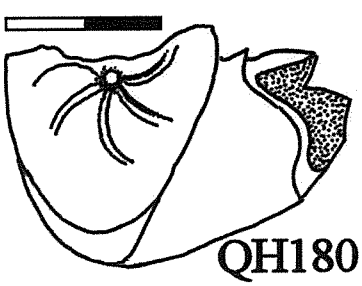
QH194
L 2.7 cm



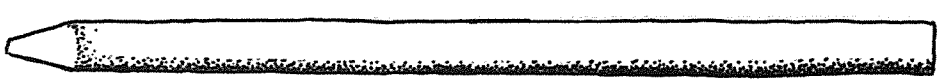
D 3.3 cm
QH104



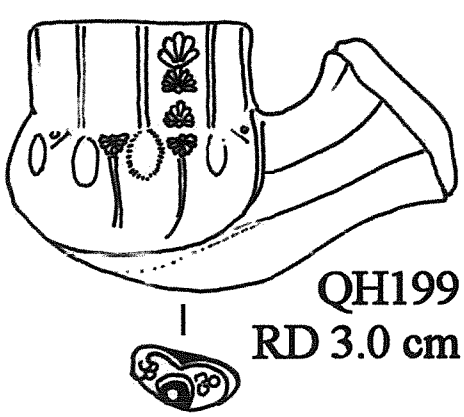
QH195
L 4.3 cm



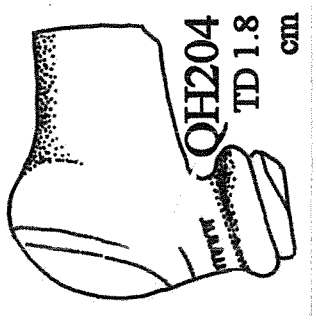
QH180

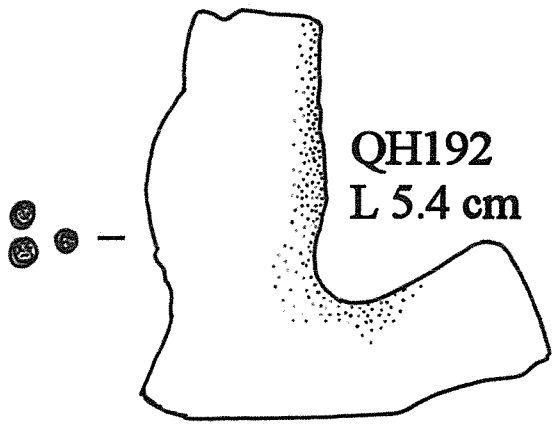


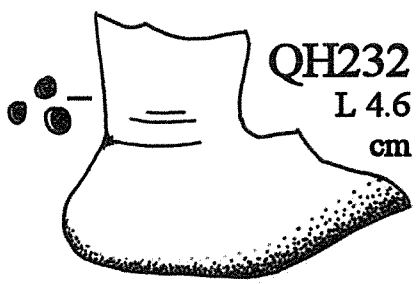
QH187 L 12.2 cm

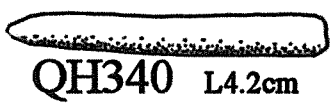


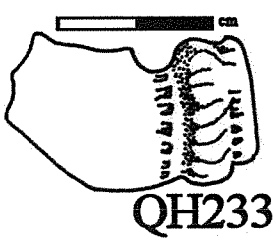
QH199
RD 3.0 cm

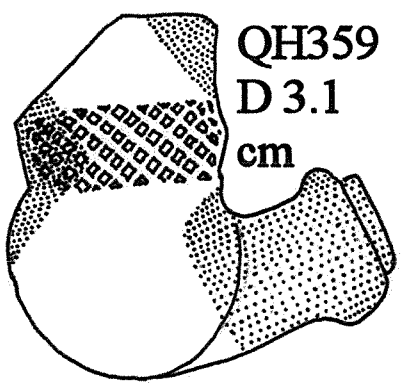

QH204
TD 1.8
cm

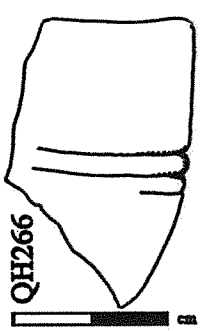

QH192
L 5.4 cm

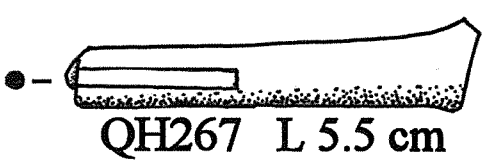

QH232
L 4.6
cm

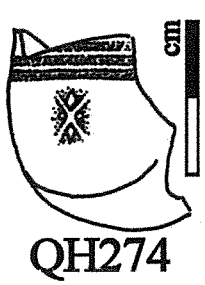

QH340 L4.2cm

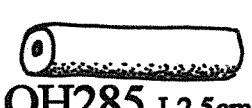

QH233


QH359
D 3.1
cm


QH266


QH267 L 5.5 cm


QH274


QH285 L2.5cm

pattern of seven arcs radiating from a central raised dot decorates both sides of the bowl albeit with the upper portion missing. A similar design is impressed on a lily-shaped bowl at Dar Othman in Tunis-Medina (photographed but not drawn). After 1850.[32]

QH187 White clay pipe stem, pointed at one end. Length 125mm, outside diameter 6mm. Appears black and partially red. This unusually straight and cylindrical stem seems to have been re-worked to use with a chibouk.

QH192 Flat base bowl with shank and hand turned rim. Dark beige clay speckled with gold spots. Damaged rim. Undecorated. 3 hole grate between rim and base. 10mm shank opening. Venetian 1670-1750.

QH193 Round bowl with short swollen ended shank, the junction forms a keel. Most of the tapering rim is missing. Shank opening 7mm. Yellow brown clay. 18th century.

QH194 Bowl with the lower part of a turned rim inclusive of 3 hole grate. Shank missing. Light terracotta surfaces, internally grey. Venetian 1670-1750.

QH195 Bowl fragment, most of rim and shank missing. Light brown clay with marine growth and dark stains. A 7mm diameter hole is bored centrally in the base of the bowl, it is so symmetric that it appears to have been drilled, reason unknown. Venetian 1670-1750.

QH199 Parallel faceted rim on rounded panelled bowl. The faceted shank flares to a scalloped termination. Buff coloured clay with signs of burnishing. Much of the shank and termination is missing. The rim panels are decorated with palmettes and floral fans. Bowl panels are divided by double incised lines ending in floral triangles at the waist, each panel contains an impressed oval of rouletting. On the left side of keel under the bowl is an oval stamp. The style has been found in numerous places as diverse as Tunis[33] and Alaska[34] and was produced in Turkey from the 19th to the early 20th century. Hayes says after 1850.[35] However, a similar pipe was excavated from a Maltese sewer abandoned in 1840.[36]

QH204 Rounded bowl with short shank leading to stepped termination. Much of the vertical rim is missing. Mould made. Terracotta clay with transparent slightly yellow glaze. 9mm shank aperture. A band of rouletted decoration spans the underside of the shank. The bowl has several randomly incised lines. 18th century.

QH232 Bowl, with fragment of shank and rim, at the base of which is a 3 hole grate. Dark beige body and a smattering of 'gold' spots. Venetian 1670-1750

QH233 Fragment of shank and stepped termination. Light terracotta clay with dark stains. Shank aperture 8mm. The shank end is gadrooned with bands of rouletted decoration on either side.

QH266 Rim fragment. Dark grey clay. Raised horizontal band incised either side around junction of rim and bowl.

QH267 Fragment of European pipe stem. White clay stained brown. McDOUGALL stamp on left hand stem and GLASGOW on the right. Late 19th century.

QH274 Bowl and shank fragment. Dark brown clay. Vestige of horizontally grooved rim. The rounded bowl has an impressed decoration consisting a diagonal cross with raised dots to left and right and raised diamonds above and below the intersection. Fragmentary keel joint. 18th century.

QH285 Ochre stained pipeclay stem fragment. 1.5mm bore. European. 19th century.

QH340 Fragment of smooth, solid, dull black stem, 4cm long slightly tapered at one end.

QH359 Rounded bowl with rim and shank. The rim has a gentle swelling around the middle and slightly fluted lip. Around the lower half of the rim is a band of impressed lattice decoration. Stepped termination. Yellow clay. The body, rim and shank have large patches of blue and ochre glaze. 10mm shank opening. Much of the rim is missing. 18th-19th century.

Discussion

Whilst it is difficult to date most of these artefacts precisely given that there is no secure stratification, there are a number of characteristics which have been used for approximate dating,[37] i.e. style, physical size, clay colour, presence and shape of a keel, diameter of the shank orifice, monogram.

At the turn of the 16th century there is a report that Turkish sailors were enjoying their tobacco and pipes courtesy of the English.[38] By 1612 European travellers in the Near East were describing tobacco pipes with wooden bowls and long cane stems.[39] For religious and for practical reasons Ottoman Turks enforced the death penalty for anyone caught smoking. In fact the practice only became legal in the early 1720s following a counter-*fatwa* by the Damascene mufti.[40] This ban and the fragility of the material may explain the dearth of early artefacts. Hayes[41] suggested that evidence for 17th century pipes should be sought outside the major cities where the *fatwa* may have been more difficult to enforce. Given the introduced tradition of burning tobacco in a ceramic bowl, the availability of clay and an established pottery industry, clay bowls (*chibouks*, *pipi tal-Qasba)* were an obvious development. Latterly there were centres of production in many towns and cities. In some workshops the level of sophistication reached an art form. However *pipi tal-Qasba* were never manufactured on an industrial scale in Malta.

Regarding the pictorial record; a round bowl with slightly flaring rim cf. QH048 was illustrated by Louis Ducros in a watercolour of 1778 'Group of young Gozitan people folk dancing'.[42] Other similar pipes are illustrated in an album of Maltese costumes in the National Library of Malta[43], 'Peasant' and 'Gentleman' being distinguished by the length of their reed stems. Badger's 'Country man' 1838 and the proprietor of Brockdorff's 'Maltese pothouse' 1849 are both enjoying reed pipes which have characteristics recognisable in this collection. Such was the popularity of tobacco that in 1801 priests in Malta were expressly forbidden to smoke in public, it being beneath their dignity. However they were free do so in private.

Tobacco, despite its widespread use, was never a big crop in Malta.[44] There are records in the archive of it being imported during the last half of the 17th century, particularly between 1654-1665 and 1684-1694.[45] Ports of origin were in Anatolia, Dalmatia, France, the Greek mainland and islands, Italy, the Levant, Lisbon, the Maghreb, Tripoli and UK.

In the 18th century tobacco and pipes were being imported.[46] Shipping cargoes listed in *Il Mediterrano* and *Lloyd Maltese* include both those items throughout the 19th and early 20th century. There is specific mention of pipes; in 1841 four times from Italy, twice from France and one part cargo from UK, in 1849 and 1869 from Anatolia. Thereafter and through to 1920 imports are mentioned from France but more frequently from the UK.

Conclusion

Although within living memory some Maltese potters made pipes for private clients, the majority appear to have been imported. The pictorial evidence indicates a high proportion of these artefacts originated in Balkan, Greek or Turkish territory. The glazed pipes are possibly Balkan. Particularly when the Venetian pipes are included the written evidence for a lively east - west trade is borne out. Increasing taste for the European style in later years is also confirmed in shipping records.

Travellers and traders by sea inevitably faced the hazard of disease. Malta's quarantine facility was obviously first class, enduring its tedium seems to have been somewhat alleviated by the narcotic effect of tobacco.

Acknowledgements

Nathaniel Cutajar, at the time Curator, National Museum of Archaeology, Malta, and curator of this collection, granted access, gave encouragement and the benefit of his specialist knowledge. Timothy Gambin generously donated maps illustrating the precise excavation site. The entire photographic record is his.

St John Simpson has been my mentor in all matters relating to *chibouks*. David Higgins provided a prompt and accurate assessment of the Northern European pipes.

Philippe Gosse communicated his forthcoming publication on pipes from the Marseille quarantine.

Notes

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7 Ibid., 298.
8 Ibid., Cassar, 295.
9 Ibid., Cassar, 305.
10 Ibid., Cassar , 288.
11 A. Russell, *The Natural History of Aleppo*, Vol.II, (London. 1794), 381. Elsewhere, Marcel Pagnol describes how in 18th century France, a prophylactic by the name The Vinegar of the Four Thieves had 'worked miracles during a previous plague in Toulon by destroying the invisible germs which propagate infection. Take a sprig of rue from the very top of the plant, a clove of garlic, a quarter of a walnut and a piece of rock salt the size of a pea'. M. Pagnol, *The Time of Love*. (London. André Deutsch, 1991).
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31 Robinson,186.
32 Hayes (1980), 3-10.
33 Wood (1999).
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35 Hayes (1980), 7.
36 Under the direction of Nathaniel Cutajar, at the time Curator, National Museum of Archaeology, Malta. The sewer system served occupants of the Auberge de Castille, one of the most impressive Baroque buildings in Valletta. It was used to quarter both French and English regiments between 1798 and 1840. Personal communication Nathaniel Cutajar.
37 I have used Hayes (1980) and Robinson (1985). Any inaccuracy is mine.
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39 W. Lithgow, *Rare Adventures,* (1632), cited in A. Dunhill, *The Pipe Book*, (London. A. & C. Black, 1924), 152-3.
40 St J. Simpson, 'An ordeal with a pipe: changing attitudes to smoking in the Near East during the 17th-18th centuries', *Society for Clay Pipe Research Newsletter* 47, (1995), 20.
41 J.W. Hayes, *Excavations at Sarachane in Istanbul, Vol. 2: The Pottery*, (Princeton. Princeton University Press, 1992).
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43 An untitled album of Maltese costumes by the Maltese artist Francesco Zimelli (1749-1803). Melitensia Collection, National Library of Malta.
44 After some initial opposition the crop was introduced on a small scale at the beginning of the 18th century. B. Blouet, *The Story of Malta, (Malta.* Progress Press, 1967), 125.
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A fresh look at Ħaġar Qim and Mnajdra temples

Katya Stroud

Our megalithic temples relate many stories. The stories that intrigue us most are those that tell us about their beginnings, their construction, use and development in prehistory. However, they do provide evidence for a different story, that which starts with their discovery by modern society. During this part of their lifespan these monuments are not only studied and analysed by scholars trying to identify their origins, but are also restored and reconstructed, thus undergoing physical changes which are not always immediately evident.

Numerous restoration and conservation interventions have taken place at both Ħaġar Qim and Mnajdra. Records of only a few of these interventions have been kept, and in some cases even this documentation is missing from our archives. It is in fact the actual visual examination of the remains, as well as the examination of photographic and pictorial evidence, that allows for their identification. This factor often makes it difficult to attribute a date to these interventions and to identify the methods and materials that were used.

Standing at the top of a ridge, the remains at Ħaġar Qim (Fig. 1) must have always been a conspicuous landmark, more so, in that they were never completely buried. Jean Houel's painting of the site in the 1780s, before its excavation by the Royal Engineers, shows that although the greater part of the site was buried, the larger megaliths were clearly visible protruding through the soil and debris (Plate 1).[1] This is what most probably led to an early excavation of the site. Houel's painting even shows two men examining items which they appear to have collected from the ground, a clear indication of the curiosity that the large stone blocks attracted at the time.

The large stones triggered the imagination of visitors to the site leading to various theories being proposed in their regard. Abela was the first to document the belief, in the 17th century, that the megalithic temples were built by giants: "*Habbiamo d'avvantaggio alcuni vestige d'opere de'Giganti [...] nel luogo chiamato in Arabico Hagiar el Kim*".[2]

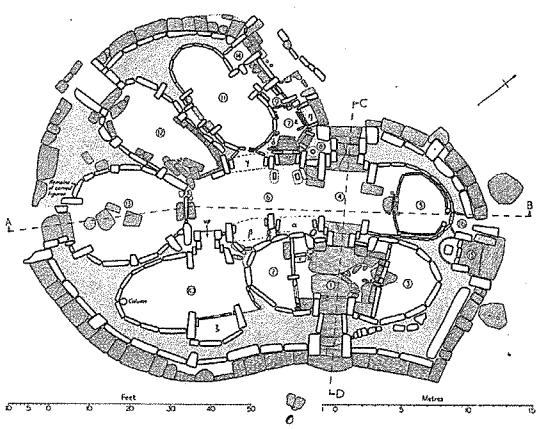

Fig. 1. Plan of main building at Ħaġar Qim. (After Evans, 1971)

Plate 1. Ħaġar Qim in the 1780s. (Houel, 1787)

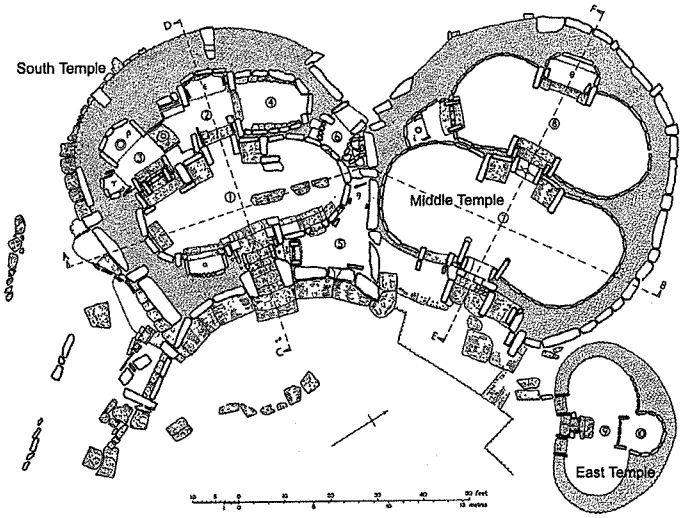

Fig. 2. Plan of Mnajdra Temples. (After Evans, 1971)

However, the beginning of the 19th century sees a new theory emerging and becoming the popularly accepted interpretation of these sites. It was in 1816 that Onorato Bres first attributed Ħaġar Qim to the Phoenicians, an ascription that would last almost a century.[3] Mnajdra (Fig. 2) seems to have attracted less attention and the only reference to it prior to excavation is by Stefano Zerafa who mentions the site in his study of the geological development of the Islands.[4] Although this mention is not accompanied by a description, it does indicate that the monument was partly visible prior to excavation.

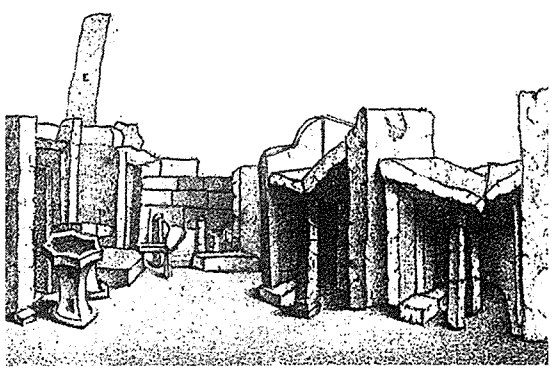

Fig. 3. Pilasters inserted to support broken table slabs at Ħaġar Qim in 1839. (Vance, 1842.)

Plate 2. Pilasters inserted to support broken table slabs at Ħaġar Qim in 1839. (Mayr, 1901)

The First Excavations

Ħaġar Qim was first excavated in 1839. Funds for this excavation were set aside by the Governor of Malta, Sir Henry Bouverie. J.G. Vance, an officer with the Royal Engineers, undertook the supervision of the excavation which lasted three months. Lt. W. Foulis drew up a plan of the site once the excavations were completed. Vance produced a short description of the remains at Ħaġar Qim in the *Malta Times* in 1840 and a more detailed account of the finds and remains in *Archaeologia* two years later.[5]

These accounts give a thorough description of the remains uncovered but do not provide much information on the excavations themselves. Vance says that 'Nearly all the walls on the northern division bear evident marks of the action of fire, some of them, indeed, being quite rotten and having the red appearance of brick'.[6] Vance also observed that the actual material excavated from the site seemed to have accumulated over a long time and that the site had not been buried in one sudden intervention.

According to Dr A.A. Caruana, Mnajdra was excavated by Vance in 1840. No information about these excavations exists and Vance only comments on the site saying that 'About a quarter of a mile distant from this site (Ħaġar Qim), rather in a hollow than on an eminence, we are enabled to trace the lines of another temple, apparently of a similar form and size'.[7]

The first restoration work at Ħaġar Qim may have been carried out during or just following the first excavation of the site. One of the lithographs by J. Basire, published in 1842 as part of Vance's report (Fig. 3), depicts stone pillars supporting a number of broken horizontal slabs. Judging by Basire's drawing and a photograph of the same area published in 1901 (Plate 2), these pillars were built in small worked ashlar blocks.

Although the excavation of the site was not well-documented, the actual uncovering of various features within the monument gave rise to numerous new theories regarding the megalithic temples, especially with regards to their structure, date and origins. In 1870 Prof. Andrew Leith Adams forwarded a new theory regarding *Mnaidra* and *Hagiar-Kim* in *Notes*

of a Naturalist in the Nile Valley and Malta, suggesting that they were close to, or formed part of, an important sea-port town.[8]

At this time the megalithic temples were still believed to be of Phoenician origin, and in 1876 Dr Cesare Vassallo develops this theory and proposes that Ħaġar Qim was dedicated to the seven *Cabiri*, deities originating in the Near East which may have been introduced to the Maltese Islands by the Phoenicians. He bases himself on the fact that seven statuettes were found within its chambers during the 1839 excavations and the building itself is divided into seven areas.[9] He also suggests that Mnajdra was dedicated to *Eshmun*.[10]

James Fergusson, who also visited the sites in the 1870s, proposes a chronology for the construction of these two prehistoric monuments. He maintains that at Mnajdra the Middle Temple is the oldest since it has a simpler style, while at Ħaġar Qim the monument first consisted of a single pair of chambers which were then extended by having the inner set of apses converted into a central court. He also publishes calculations made by Colonel Collinson regarding the roof of the buildings saying that this was constructed by means of corbelling and reached a height of around 30 feet.[11]

Fergusson also points out the fact that these monuments were different to anything found in Europe saying that 'if we are ever to find their originals, it is to Africa we must look for them.'[12]

1885 Excavations and Restorations

In June 1885 a proposal was made to build a rubble wall around Ħaġar Qim so as to protect it, but as the remains had never been thoroughly surveyed and their extent never actually ascertained, it was decided to carry out further excavation works before the construction of this boundary. Thus, following orders given by the Governor Sir John Lintorn Arabin Simmons, Dr A.A. Caruana, who was in charge of the Museum of the Public Library at the time, made some supplementary excavations at the site between August and December of 1885.

In 1886, Caruana published a report on the excavations together with a proposal for the monument's restoration.[13] The excavations did not yield any new information about the remains but new plans and elevations were drawn by Dr F. Vassallo. In his report Caruana considers the possibility that the remains could actually be older than the Phoenician period; an innovative perspective for his time.

Following excavations an extensive restoration programme was launched with the view that 'some of these imposing works of Maltese Cyclopean art might be made, with a little skilful restoration, to look almost as complete as when they were originally constructed.'[14] Vassallo's drawings indicate the areas that were restored in 1885, as well as areas proposed for future restoration.

Part of these works seem to have included extensive clearance of the area in front of the façade, as is indicated by a comparison between photographs taken in 1868 and *ca.* 1900 (Plates 3 and 4). Restoration works included the lifting of collapsed megaliths in various areas of the building, as well as the reconstruction in dry-stone walling of walls enclosing the whole area of the forecourt and the court at the rear of the main building at Ħaġar Qim. According to Albert de La Marmora these walls formed the *temenos* around the site and Caruana says that the dry-stone walls were built on ancient foundations since during the

Plate 3. The forecourt at Ħaġar Qim before clearance in 1885. (Album of the Society of Archaeology, History and Natural Science of Malta, 1868)

Plate 4. The same area after it was cleared. (Richard Ellis Ltd., ca. 1900)

course of excavations 'considerable portions of the megalithic structure, originally bounding these two courts of unequal extent, have been recovered'.[15] In addition, the semi-circular wall at the back of the external niche was also reconstructed in dry-stone walling.

It is interesting to note the choice of materials and techniques used in these restorations. The use of dry-stone walling, or rubble walls, to rebuild some of the original features that had been lost, allows for easy identification of these modern restorations due to the different building technique they employ. On the other hand, having the architectural features represented in this manner helps recreate part of the geometry of the buildings that was lost. The material used, that is, Globigerina Limestone, is the same as the original and is therefore aesthetically compatible with the original materials. The height of the restored walls, however, is arbitrary since no evidence was available for the height of the original walls. Caruana's graphic documentation of these interventions provides invaluable information on the restorations carried out.

Developing a Scientific Approach

Up to the beginning of the 20th century no systematic study was made of the megalithic temples or the finds collected during their excavation. Indeed, all the pottery collected from Ħaġar Qim was 'discovered' in two baskets in the lumber room of the Public Library in 1902.[16]

A fresh and more systematic approach to the study of these monuments was taken in the beginning of the 20th century by Dr Albert Mayr, a German archaeologist. Mayr conducted a study tour of the Maltese Islands in 1897-98 during which he catalogued all the prehistoric remains known at the time. He published his studies and observations in 1901, providing an extremely detailed description of *Mnaidra* and *Hajiar-Kim* including new plans of the sites. Mayr ascertained that the Temples were built before the Phoenician period and possibly dated back to the Bronze Age, between the end of the 3rd and 2nd millennium BC.[17]

Further excavations at Ħaġar Qim were carried out in November 1909 by Prof. Temi Zammit and Prof. T. Eric Peet. This paved the way for a more extensive investigation at both Ħaġar Qim and Mnajdra in 1910 under the direction of Dr Thomas Ashby, then Director of the British School at Rome. These excavations are the first to provide stratigraphic data for these remains.[18] The investigations were carried out with two objectives in mind; to ensure that the plan of the remains had been completely uncovered and to obtain a sample of pottery from each site.

Trial excavations were made in various apses at Ħaġar Qim bringing to light a number of features within the monuments. Ashby's excavations at Mnajdra led to the discovery of the East Temple, while the area in front of the Middle Temple was found to be paved. The Middle Temple was also found to rest on an artificial platform, probably built to provide a level surface on which the building could be constructed.[19]

These excavations were also followed by extensive restoration works. At Ħaġar Qim some of the slabs lying on the ground in front of the entrance to the main building were lifted to form part of the top horizontal course of the façade, whilst the large slab found in the forecourt and believed to be the lintel of the entrance was raised on pillars and repaired (Plate 5).[20]

Additional restoration work included the replacement of the pillars which had been used to support three horizontal slabs in 1839. A number of collapsed megaliths were replaced in their presumed original positions, and in one such case a low wall built in Globigerina ashlar blocks was constructed to support the restored megalith. The pillars and wall are still visible on site today.

Unfortunately Ashby's report does not

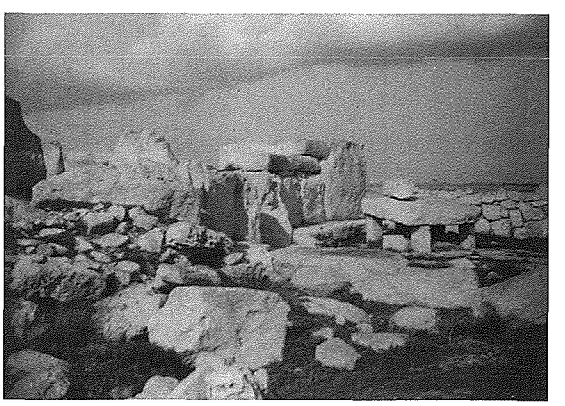

Plate 5. Façade of the main building at Ħaġar Qim after repair of the lintel and restoration of upper courses in 1910. (National Museum of Archaeology)

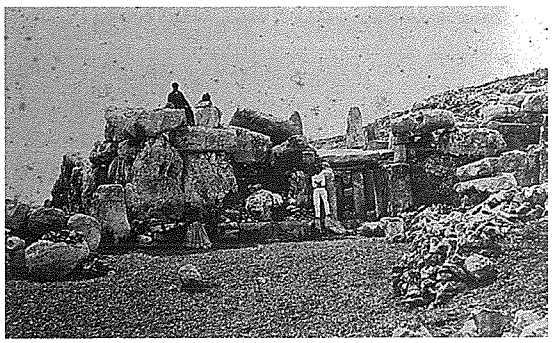

Plate 6. The façade of the South Temple at Mnajdra in 1868. (Album of the Society of Archaeology, History and Natural Science of Malta, 1868)

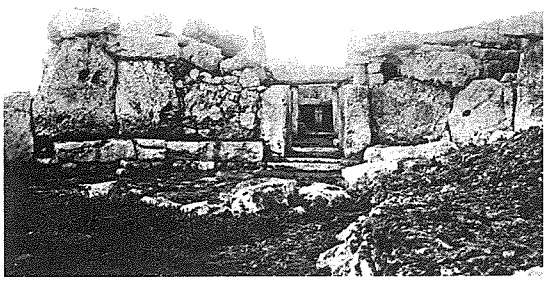

Plate 7. Restoration of the façade of the South Temple at Mnajdra in 1910. (Ashby, 1913)

include further details regarding the restorations carried out in 1910, however it appears that the majority of the recommendations for restoration made by Caruana were actually implemented. No information is available regarding the materials used to fix broken megaliths but since the majority of these repairs still exist today, one may conclude that Portland cement was widely employed to repair broken or cracked megaliths.

At Mnajdra Ashby mentions the restoration of the facade of the South Temple.[21] Comparing photographs of the façade taken in 1868 (Plate 6) with those published by Ashby in 1913 (Plate 7) one can get an indication of what these restoration works actually involved. It seems that part of the south-west section of the façade was reconstructed by reintegrating a collapsed megalith.

Within the South and Middle Temples blocks that were found on the floor were replaced in their original position, forming part of the upper horizontal courses, whilst a number of modern pillars were introduced to support broken horizontal slabs. The façade of the Middle Temple was described by Mayr as being completely destroyed. Despite this, in 1910 it was possible to repair and lift the collapsed stone slabs which once formed its entrance, whilst the south-west section of the façade, which was missing, was reconstructed in small Globigerina blocks.[22] As in the case of Ħaġar Qim, cement seems to have been used extensively for repairing broken or cracked megaliths.

On site visual observation of these interventions indicates that a large number of repairs in cement have now cracked and in some cases the cement has become detached from the stone surfaces. In other examples, megaliths repaired in cement have since developed new cracks and breaks. Failure of these repairs is due to the difference in the physical and chemical characteristics of cement from those of limestone with the result that rather than repairing the megaliths, additional damage was caused by the use of this material. However, one has to keep in mind that Portland cement was used when no alternative adequate material was available. Cement was in fact the material of choice for restoration and reconstruction in the first half of the 20th century. It was commonly used at other major archaeological sites, such as the site of Knossos where extensive reconstruction between 1922 and 1930 was carried out in cement and concrete.[23]

Understanding the Architecture of the Megalithic Temples

Following new information recovered from the 1909-1910 excavations, Zammit published *The Neolithic Temples of Hajar Kim and Mnaidra and the "Miska" Reservoirs* in 1927. Here, he proposes a rough date for the construction of the megalithic temples:

'We should always bear in mind that we have before us the naked and often mutilated skeleton of the original building, battered and wasted by every adverse agency for six thousand years, so that we can hardly conceive the beauty and the finish of a monument decorated with all the care that an artistically minded people lavished upon it.'[24]

In the 1930s studies about these sites revolved around the actual structure of the prehistoric buildings and the question of roofing was again placed in the forefront of academic debate. In 1932, Peet suggests that although the apses were most probably covered with a

system of corbelling, the central areas were more likely left uncovered.[25]

However, in 1934 Prof. Luigi M. Ugolini in *Malta: origini della civiltà mediterranea* maintains that the prehistoric buildings were completely roofed over by a stone vault.[26] He was supported by Arch. Carlo Ceschi who in 1939 published an extensive study on the architecture of the monuments, *Architettura dei templi megalitici di Malta.* He refers to the remains of Ħaġar Qim and Mnajdra Temples in explaining his theories since the remains of corbelling were still preserved in these sites and produces artistic impressions of what the ceiling over the South Temple at Mnajdra would have looked like.[27]

Restorations following World War II

Following the Second World War, a programme for the restoration of a number of sites was taken in hand. Between 1948 and 1950 large-scale restoration works were carried out at Ħaġar Qim and Mnajdra under the direction of Dr J.G. Baldacchino, then Director of the Museums Department.

It is during this campaign of restoration that Ħaġar Qim underwent the most drastic aesthetic changes, especially to the façade of the main building. The collapsed area at the southern end of the facade was cleared in 1948, leading to the discovery of the so-called bench running along the base of the whole facade. Clearance was followed by lifting of the collapsed megaliths in this area. During the spring of 1949 the lintel that had been repaired in 1910 was reinstated within the façade, capping the entrance.[28] Two courses of masonry, overlying the orthostats on the façade, were also rebuilt at this time.

In 1958 the Museums Department carried out repair works on the lintel of the main building at Ħaġar Qim as this had developed new cracks since its reinstatement in 1949.[29] However, this lintel has since undergone further damage.

Other works at Ħaġar Qim in 1949, included the repair of the top part of the corner-stone at the south-west end of the façade as well as a number of uprights. These were repaired using cement mixed with Globigerina chippings (Colour Plate 9, see p. 38).[30] Three large heaps of rubble lying in the vicinity of the ruins were also removed together with a large part of the *temenos* that Caruana had rebuilt in 1885.[31] Ashby's investigations had led him to conclude that this *temenos* was constructed on modern foundations rather than original ones as Caruana had believed.

Extensive works at Mnajdra were commenced in 1952. These works, carried out by the Museums Department, were 'undertaken with a view to tidying up the site and arriving at a clearer understanding of its extent'.[32] The rubble walls and soil of the terraced fields situated in the area of the forecourt were removed and further clearance in the area to the east of the remains revealed further stretches of megalithic masonry as well as a series of steps next to the East Temple.

Other interventions on the remains at Mnajdra included the construction of modern rubble walls along the outer perimeter of the East Temple. These walls followed the outline of the building that was uncovered during clearance works. The platform fronting the façade of the Middle Temple was also restored to its original height in dry-stone walling.[33]

The same technique was used in 1953/54 to reconstruct the outer walls of the Middle Temple.[34] In 1897/98 Mayr saw that along these walls only the megaliths that had been placed radially were left standing, while the ones that had been placed with their broad side facing outwards were missing. The missing parts of the external walls of the South Temple were similarly reconstructed in dry-stone walling in 1954/55.[35] These restorations are still visible today.

Interventions in the 1980s

No major restoration or conservation work was documented for Ħaġar Qim and Mnajda for almost three decades. The Museums Department's annual report for the year 1984 includes references to 'important restoration works' carried out on the Ħaġar Qim Temples but it does not provide further information on what these works involved.[36]

However, in a paper on the use of different consolidants on Globigerina Limestone, published in 1985, the authors mention that during the preparation of their paper, repairs were carried out in a lime-based mortar to the door jambs and two other blocks in the main building at Ħaġar Qim.[37] On-site observation

however demonstrates that the material used was cement-based.

Unfortunately, even at this late stage, no adequate records were being kept for interventions on these sites and it is likely that other restoration or conservation work took place, the knowledge of which has been completely lost. In addition, the adverse effects of cement on limestone were widely known in the 1980s and alternative materials for the restoration interventions mentioned above were readily available, nonetheless, cement was still used for these interventions.

Replicas of the decorated slab and altar originally found in the first chambers of Ħaġar Qim which were on display at the National Museum of Archaeology were also placed within the monument when the restoration works mentioned above were completed.[38]

As awareness of the need for effective conservation of Mnajdra and Ħaġar Qim increased, related studies and interventions also became more frequent. In May of 1990, Ing. Arch. Gennaro Tampone, leading the Malta-Florence Bilateral Project which was set up to better understand the conservation problems of the megalithic temples, carried out two restoration interventions at Ħaġar Qim. A number of unstable stone blocks were lifted from their original position and then placed back in the same location within the site but in a more stable position. In each case small thin lead sheets were used as wedges and placed beneath the block to help keep it in equilibrium.[39]

Recent Interventions

Throughout the early 1990s a number of small interventions were carried out on both Ħaġar Qim and Mnajdra, however no systematic conservation exercise was planned and no preventive steps were taken to preserve the sites. Most interventions were in fact a direct response to the visible effects of deterioration, which in some cases took a catastrophic form.

In April 1994 part of the wall separating the South from the Middle Temple at Mnajdra collapsed (Plate 8). This was caused by the effect of heavy rainfall which led to the material beneath the floor of the Middle Temple becoming saturated and causing pressure on the structure which was supporting it. After a study and assessment of the damage carried out by Prof. Alex Torpiano in collaboration with the Museums Department, extensive works to restore and consolidate the area of collapse were undertaken.

The collapsed megaliths were lifted and the exposed infill area was cleared and excavated. A new wall was constructed in concrete bricks so as to retain the infill beneath the floor of the Middle Temple and prevent it from exerting pressure on the original wall once this was reconstructed. The megalithic blocks were then replaced in their original locations covering the modern retaining wall.[40]

This reconstruction was accompanied by the installation of a rainwater drainage system in the Middle Temple. Pipes were placed on plastic sheets along the top of the walls of the building and these were then covered with limestone chippings. Geotextile sheeting was also laid on the floors of this building. In this way rainwater would drain away off the wall and floor surfaces rather than seeping into them and creating pressure on the structure.[41]

Unfortunately there was no monitoring of this drainage system so that, although in theory this intervention should aid the structural conservation of the site, it is difficult to determine how successful it actually was. In addition, no maintenance was carried out after its installation so that some of the water drainage pipes eventually became exposed to the elements and deteriorated making them ineffective.

In November 1998 a stretch of megalithic masonry forming the wall between two apses at Ħaġar Qim collapsed. This collapse was also the result of the effects of heavy rainfall

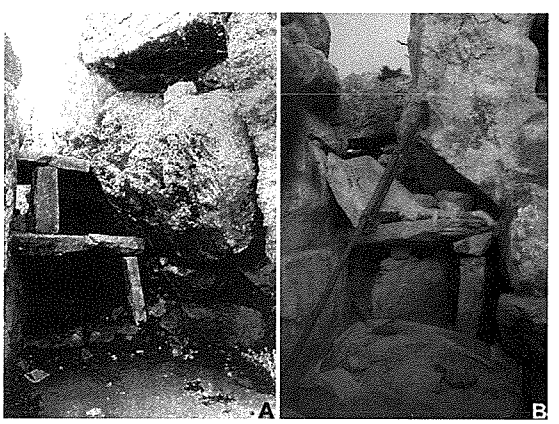

Plate 8. Part of the structure which collapsed at Mnajdra in 1994. (8a National Museum of Archaeology. 8b Marlene Borg, 1996)

which washed away the infill material between the two outer skins of the wall, weakening it and eventually leading to its collapse.[42] The restoration, which took place in July 2001, involved the identification of the original location and position of each dislodged block and the restoration of each block to that location. Part of the works involved the introduction of a pillar constructed in Globigerina Limestone blocks. This was necessary since one of the megaliths had completely disintegrated and was unable to support other dependant structures.

Restoration works at Mnajdra were also carried out under the direction of the Museums Department, between June and July 2001, following an attack of vandalism in April 2001 that affected a number of apses in the South and Middle Temples. During this incident a large number of megaliths were dislodged from their original positions. Restoration of the damaged megaliths involved repositioning, as far as possible, in their original locations as well as the repair of the damage they sustained.

Epoxy adhesives were used to repair megaliths that are vital for the structural integrity of the remains, while hydraulic lime mixed with sand was used for repairs whose strength would not affect the structure's stability.[43] Both materials are compatible with the original ones and have no adverse effects. Although the use of epoxy is not reversible, it does not preclude or impede future treatments or interventions, reversibility having been recently been replaced by principles of compatibility and re-treatability.[44] In cases where the damage sustained by the megaliths was located in areas where previous repairs had been carried out using cement, the cement was removed manually before the megalith was repaired.

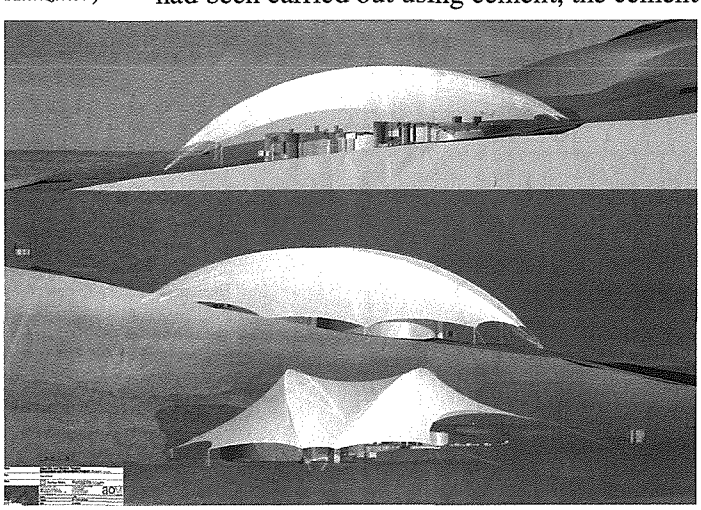

Plate 9. Preliminary designs for the shelter at Ħaġar Qim (Walter Hunziker)

A Future for Ħaġar Qim and Mnajdra

The history traced above indicates a change in approach in recent years. Up to the 1950s interventions of restoration and reconstruction were carried out with the sole aim of trying to make these sites appear as they had in prehistory. This approach obviously depended heavily on modern interpretation of these prehistoric buildings. More recently, in the 1980s and 90s, interventions became more reactive, being carried out to counteract the effects of deterioration.

This approach evolved once more in the past few years. Possibly due to the alarm raised by the major collapses in 1994 and 1998, a more erudite approach was adopted for the preservation of these sites, so that preventive measures of conservation started being considered. In May 1999, the Ministry of Education convened an international experts' meeting bringing together a range of expertise and experiences to formulate possible strategies for the conservation and management of the megalithic temples. One of the recommendations resulting from this meeting was the establishment of an Advisory Committee to provide the Museums Department with support in technical matters, and in the definition of a management and conservation strategy for the megalithic temples.

As a result, the Scientific Committee for the Conservation of the Megalithic Temples was established in April 2000. Part of the remit of this multidisciplinary committee was to advise the Museums Department on possible preventive conservation solutions for these monuments. Following a thorough study of the causes of deterioration of the megalithic temples, the Scientific Committee recommended the construction of an 'umbrella structure' or shelter over the sites. This would protect the prehistoric monuments from the immediate effects of their natural environment which was identified as the main cause of their deterioration.

On the 28th August 2000 it was announced that Cabinet had approved the temporary sheltering of temple sites, giving priority to Ħaġar Qim as a pilot project. Later on this

Plate 1. Rock-hewn shaft on east side of Santa Maria Bay. The sides of the shaft are mortared and preserve traces of paint

Plate 2. Recently discovered rock-hewn shaft overlooking the south coast of the island

Plate 3. Located at the tip of a promontory, Għar il-Ħamrija commands unobstructed views of Wied l-Aħmar and Santa Maria Bay

Plate 4. Rectangular dry-stone wall enclosure flanking the cave entrance

Plate 5. Detail of cave entrance

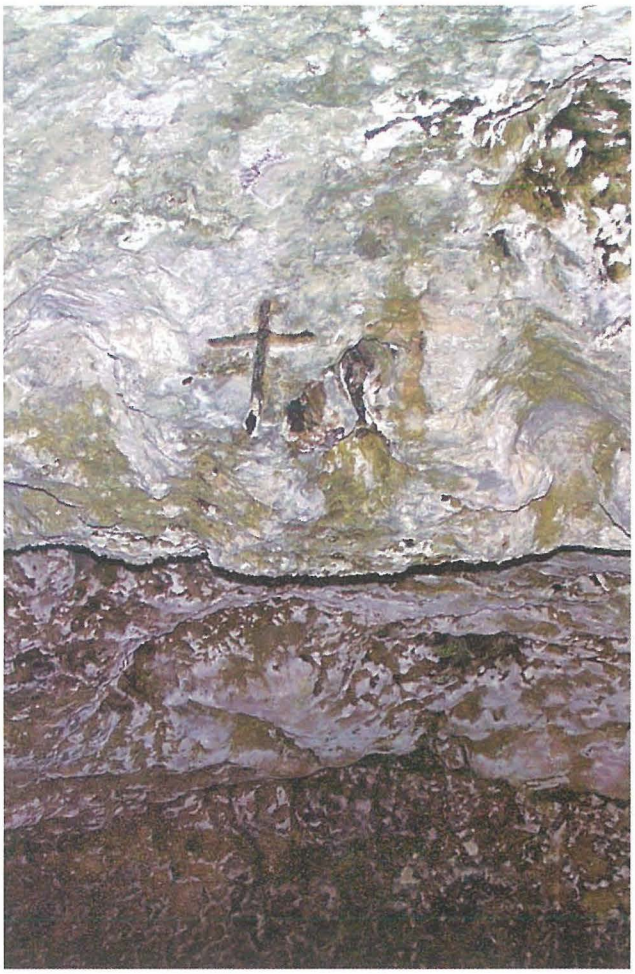

Plate 7. Detail of cross-monogram carved in the cave's ceiling

Plate 6. Detail of cave-roof showing the extent of the original cave


QH002
cm


QH006
cm


QH007
cm


QH008
cm


QH020
cm


QH021
cm
0 1 2 3 4 5


QH022
cm


QH023
cm
0 1 2 3


QH024
cm


QH025
cm


QH027
cm


QH029
cm

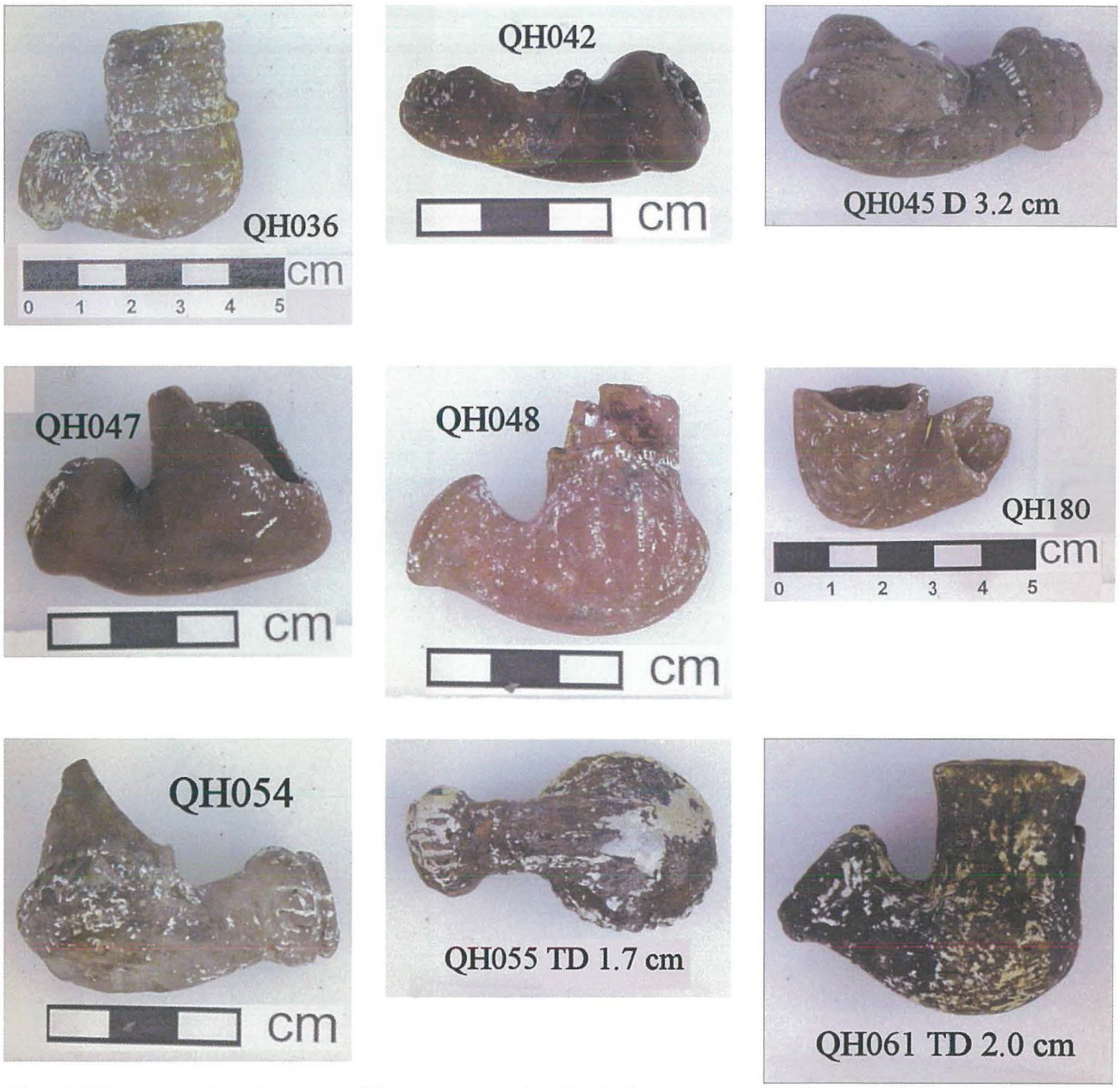

Plate 8. Tobacco pipes from European and Ottoman sources, found at the Lazaretto excavation

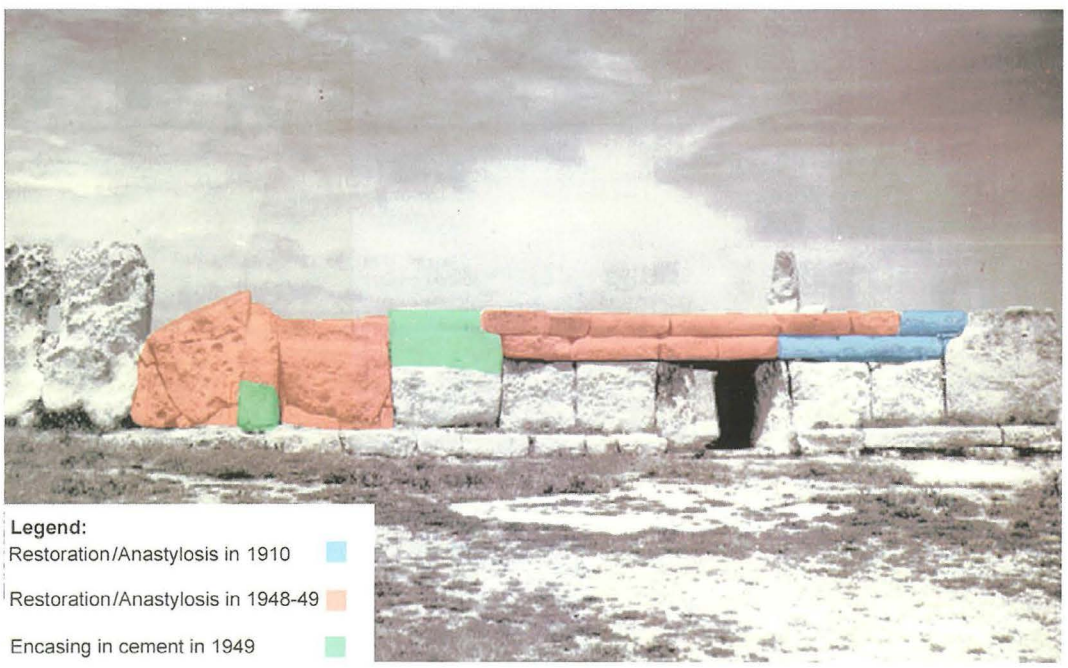

Plate 9. Different phases of restoration of the façade of Ħaġar Qim

was extended to include Mnajdra. Following this, an International Design Competition was launched by the Ministry for Youth and the Arts in November 2003. The competition was judged in April 2004 and a Swiss architect, Walter Hunziker was chosen to design shelters for these monuments. European Union Structural Funds were captured to fund this project. (Plate 9).

The temporary shelters over Ħaġar Qim and Mnajdra will in no way be a solution to all the conservation problems of these monuments. They will however help buffer and slow down the effects of the causes of their deterioration and will therefore aid in prolonging the lifespan of these sites. In doing so, these shelters will also provide us with a longer time-span in which to study and identify adequate materials and techniques for their conservation. This is a revolutionary approach to the preservation of these sites. It will have a larger visual impact than any of the interventions carried out on these sites since their excavation. On the other hand, the shelters will preserve the sites without having any long-term direct impact on them. In addition, this intervention makes a clear statement that in future these monuments will be protected and preserved using the optimal available methods and that any measure required to ensure that future generations will be able to enjoy and appreciate these sites will be undertaken.

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A possibly Christian burial of the late Roman period discovered in a quarry at Ta' Sannat, Gozo

George Azzopardi

According to the Museum Annual Report for the years 1928-9, the Police Occurrences Register for the period 20/12/1928 – 9/4/1929, and Public Works correspondence for the period 5/9/1928 – 3/4/1929, a burial was discovered in a quarry at Ta' Sannat on 7th January 1929. The report of the discovery was initially received by Mr Edward Borġ Cardona, the District Engineer Public Works Department (Gozo). Together with Supt. E. Galea, he immediately visited the site and gave instructions to halt works and for the site to be kept under police supervision. A report was also submitted to the Director of Museums. The burial yielded a small jar, an *oenochoe* (wine-jug), and a red clay lamp close to a heap of human bones. This is probably what was seen by Prof. Temi Zammit, the Archaeology section curator, when six days later (on 13th January), accompanied by Mr Edward Borġ Cardona, he examined the site and the finds that had been lifted from the tomb. The Museum report, written by Zammit, describes the lamp: on its (dished) top, it carried two small oil-holes between which a dove with spread wings was shown in relief. It had a straight

Fig. 1. Detail of Map of Gozo showing the area of Ta' Sannat and (inset) location of the tomb findspot

(vertical) solid handle while a large capital 'B' was engraved/stamped on its base.[1] This was probably the manufacturing workshop's stamp or the potter's personal one (in that case, perhaps his initial) as manufacturers in these workshops/factories did sometimes stamp their products in this manner.[2]

Location and circumstances of the find

The quarry (now reverted to an agricultural field, though smaller than before) was located towards *Ta' Xaman* or, more precisely, in the area known to the local farmers as *Tas-Seqer* between *Ta' Randu* and *Ta' Marziena* (Fig. 1). It belonged to Frangisku Grima, known as *Il-Gabillott*, from Ta' Sannat but was on lease to Frenċ Mercieca, known as *Ta' Furtun*, also from Ta' Sannat. The latter operated the quarry and discovered the tomb on 7th January 1929, when he was 36 years of age.[3]

Like the majority of the quarries, this one had previously been an agricultural field. As an initial step in the process of stone extraction, the topsoil from a designated part of the field was removed, exposing the rock surface beneath. The topsoil was usually heaped on the sides of the field to be re-spread over the same area once stone extraction (from that area of the field) was completed. The process was similarly repeated on other areas of the field earmarked for stone extraction.

On exposing the rock surface following the removal of the topsoil in preparation for quarrying in the south-eastern part of the field (as it is today), a tomb was discovered. It was cut in the rock surface below *ca.* 2.5/3 feet of topsoil. It was also found that rock-cutting had already taken place there sometime earlier.

The tomb

The tomb consisted of a shallow rectangular pit/trench – somewhat irregular in shape – of a type known in the Roman world as *fossa*. As it was cut on the horizontal rock surface, it must have been an open-air tomb (Fig. 2). It measured *ca.* 6 feet (length) by *ca.* 2 or 2.5 feet (width) by *ca.* 1.5 feet (depth) and was orientated North/South. The tomb was also completely full of soil up to its edges.

Salvinu Mercieca, *Tal-Ġermaniż*, who kindly indicated the burial site to me and supplied the information, clearly remembers the discovery of the burial as he was then aged 16 years. At that time, he was employed in his father's quarry situated near the one where the discovery took place. He does not remember whether there were any tool marks visible on the internal rock surface of the tomb but he is convinced that it was definitely not a natural depression. He remembers, however, that there was no rebate cut round the edge of the tomb enabling it to be closed by a horizontal stone slab or slabs on the same level as the rock surface surrounding the same tomb.[4]

A tomb of this type could have been closed in different ways. A common way of covering *fossa* tombs – particularly those like that of Ta' Sannat where the rebate for horizontal sealing slabs is absent – could have been by way of clay tiles (*tegulae*) set gable-wise (Fig. 3). Carved and hollow roofing tiles (*imbrices*) were sometimes added along the ridge. *Fossa* tombs covered in this manner can be seen, for example, at Isola Sacra necropolis north of Ostia, the port of Rome,[5] while certain burials among those discovered in St Francis Square in Victoria,

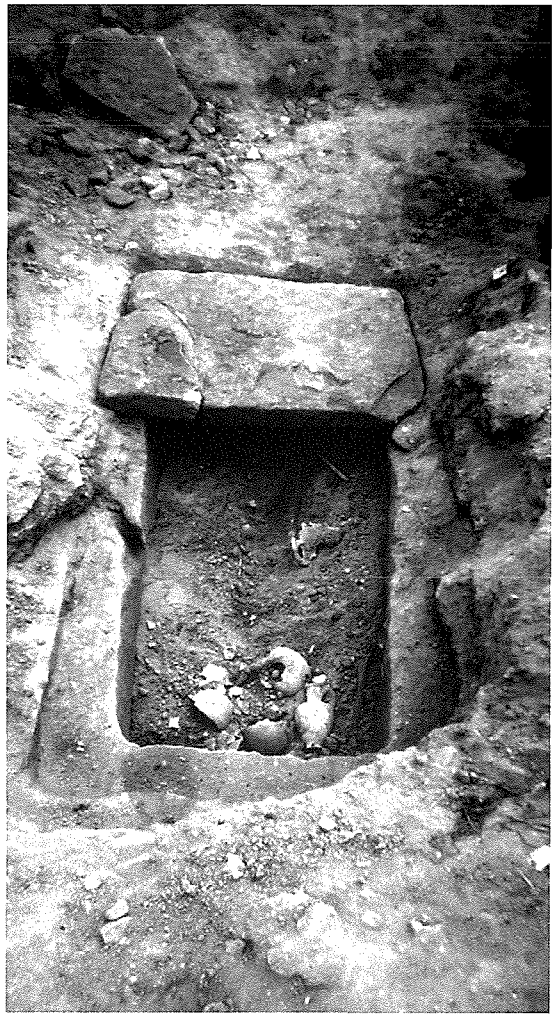


Plate 1. The rock-cut open-air fossa *tomb similar to the one at Ta' Sannat but discovered at Marsalforn on 26th March 1936. (Photo courtesy: Lawrence Zammit Haber)*

Gozo also appear to have been covered in a similar manner.[6]

Salvinu Mercieca remembers that the internal rock surface of the tomb, like the rock surface surrounding the same tomb, bore a dark reddish patina: apparently, soil patina. He also remembers that the bottom of the tomb was rather uneven and quite unlevelled with the southern end being slightly deeper than the northern one but this could have been merely accidental. Furthermore, he remembers a small concave hollow cut into the rocky bottom of the tomb on its northern end. This hollow, which was rather shallow and was covered with the same patina covering the tomb interior, did not appear to be natural. Thus, it is very likely to have been a corpse head-rest but without any visible traces of a rock-cut 'pillow' where the head-rest stood, as one would normally expect to find in similar tombs of the same period.

During the soil clearance process, the tomb yielded the articles mentioned earlier, namely, the small jar, the *oenochoe*, the oil lamp, and the human bones which were disarticulated. All of these were mixed up with the soil in the tomb, indicating that the burial had been tampered with sometime earlier. This is not surprising considering the fact that rock-cutting had already taken place there in earlier times.

Close to the tomb were found other separate depressions resembling troughs cut in the rock surface. Some of them were quadrangular in shape while others were rather circular, but all of them were smaller than the tomb. Their internal rock surface was also covered with a dark reddish patina. They were as deep as the tomb itself, although some of them were shallower. These depressions were also full of soil but contained no complete ceramic articles or bones. They contained only ceramic sherds mixed up with the infilling soil. Sherds were also found within the tomb itself and the rest of the field. The nature and use of these depressions are unknown, although in no way do they appear to have been used for burials. Similar depressions were occasionally found in a quarry near the one where the tomb was discovered, but even these yielded only ceramic sherds mixed up with the infilling soil.

The investigations

On receipt of the report of the discovery, Frenċ Mercieca was instructed to halt works while the site was kept under constant police supervision . The police constable carrying out the night-watch took shelter in a small dry-stone hut which exists to this day in a nearby field. This hut was used as a tool-shed by Salvinu Mercieca's family to keep quarrying tools. Six days after the discovery, the site was inspected by Prof. Temi Zammit accompanied by Mr Edward Borġ Cardona. The finds were collected from Frenċ Mercieca who was allowed to proceed with the quarrying while police supervision was discontinued. As a result of quarrying, it is very likely that the tomb was completely destroyed. However, it is not to be excluded that part of the tomb was saved as quarrying in that part of the field ceased when good quality stone was no longer found and, thus, that part was re-buried under the same soil unearthed previously. Eventually, with the exception of its north-eastern part (as it is today), the field was entirely quarried.[7] It is not known either officially or unofficially whether other tombs have ever been found in that area or in the vicinity.

Similar tombs

The discovered tomb resembled the rectangular floor tombs found in Maltese Christian catacombs, like those of St Paul in Rabat, Malta and those of *L-Abbatija tad-Dejr,* limits of Rabat.[8] But, more specifically, it resembled the open-air ones such as those near the Salina catacombs, limits of St Paul's Bay. Tombs of this latter category near the Salina catacombs amounted to around twenty five (today, fewer than that might survive) and were all shallow with a head-rest over a rock-cut 'pillow' for the head of the corpse. Another similar tomb was reported at *Ix-Xagħra tal-Magħlaq* near Qrendi. These appear to represent a late type of Christian tomb which probably developed at a time when burial in open-air cemeteries started to replace burial in underground catacombs.[9]

A rectangular open-air floor tomb at *Il-Wied ta' Kandja* (Malta) resembles the Ta' Sannat one in lacking any rebate for a horizontal sealing slab/s but it bears a head-rest over a stone 'pillow' for the head of the deceased. It measures 5.6 feet by 2 feet, reaching a maximum depth of 1 foot, and is aligned on a North-east/South-west axis.[10]

Another rectangular rock-cut open-air floor tomb – also of the *fossa* type but, this time, from Gozo – which could have likewise been of a late Roman date - was discovered at Marsalforn on 26th March 1936 (see Plate 1 showing the Marsalforn tomb on its discovery). It was discovered by workmen whilst widening a pathway (*Strada Passaggio*) joining *Strada Santa Maria* with *Strada Forno*. Its measurements (length: 7 feet, width: 2.4 feet, depth: 1.3 feet) and orientation (North-west – South-east) were also close to those of the Ta' Sannat tomb, but it contained the skeletal remains of three individuals and was covered by three horizontal stone slabs resting on a rebate purposely cut round the edge of the grave. Apart from fragments of a Roman amphora and three pebbles, a complete vessel which might be an *aryballos* was found deposited next to the skulls on the north-western end of the tomb. At the bottom of the grave there was a relatively large and roughly circular cavity full of silt and covered with a flat stone slab.[11]

Apart from the North-African red-ware lamp which is likely to have been an import, another possible North-African 'import' concerning the Ta' Sannat tomb may have been the above-ground or open-air type of the tomb itself. Like the open-air ones near the Salina catacombs, the ones at *Ix-Xagħra tal-Magħlaq* near Qrendi and at *Il-Wied ta' Kandja*, and also the one at Marsalforn, the Ta' Sannat tomb seems to resemble the majority but not all of the North-African burial places in being also above ground or in open-air.[12] Alternatively, however, the choice or need of a shallow open-air floor grave at Ta' Sannat could have also been dictated by an emergency burial as, in such circumstances, the digging of an underground grave would have taken too long.[13] But the possibility that the Ta' Sannat tomb was a pauper's burial – as apparently suggested by the simple form of the tomb –

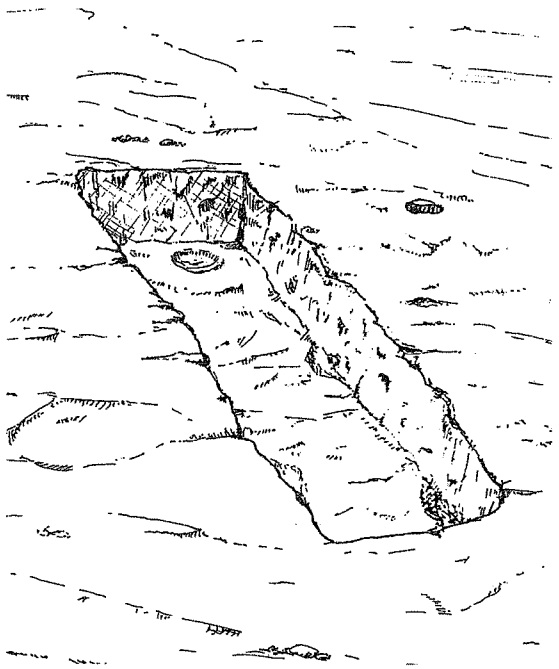


Fig. 2. An artist's impression of the tomb based on information kindly supplied by Salvinu Mercieca who remembers well the discovery. (Drawing: Joseph Calleja)

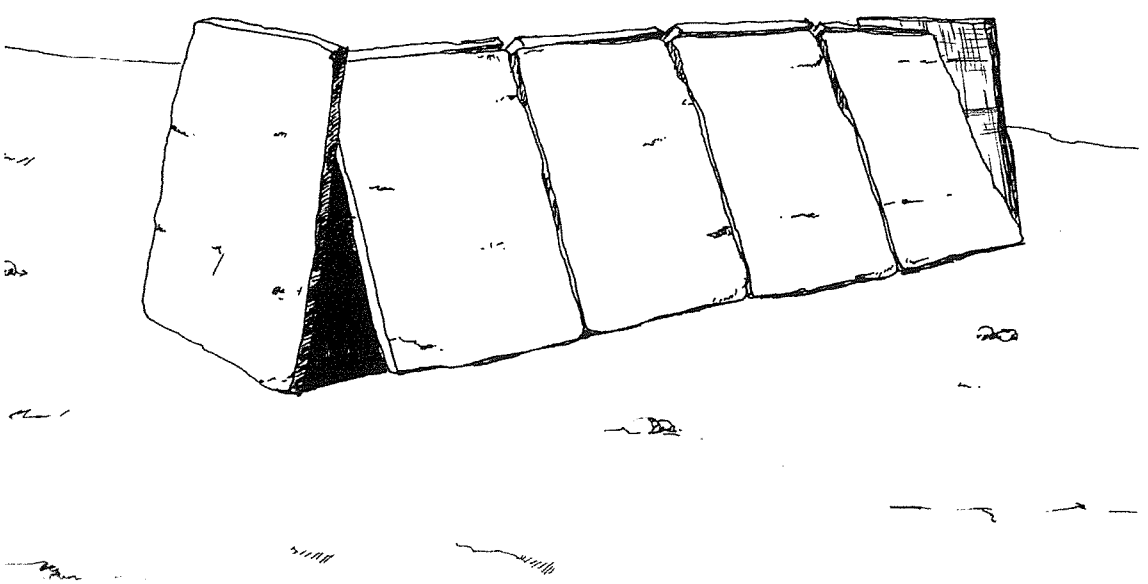


Fig. 3. A fossa *tomb covered by clay tiles (*tegulae*) set gable-wise. Without excluding other alternatives, the Ta' Sannat* fossa *tomb may have been covered in this manner, especially in view of the missing rebate for horizontal closing slabs (Drawing: Joseph Calleja)*

does not seem to be much in consistency with the finds contained in the same tomb. The type of red-ware lamp, in particular, does not appear to be indicative of a poor burial, although not necessarily a rich one either.

The discovered articles

The *oenochoe*, like the one discovered in the tomb, was a single-handled jug, sometimes having a trefoil-shaped lip. As indicated by its Greek name, it was used as a receptacle from which wine was poured, but its use for other liquids like water and oil as well is not to be excluded either. On our islands, the *oenochoe* is to be found from Phoenician times but it remained in manufacture and use even as late as the late Roman period.

On the basis of the description provided in the Museum Annual Report, the discovered oil-lamp appears to have belonged to a type manufactured in North Africa from the 4th to the 6th centuries A.D. (Fig. 4). As lamps of this type were mould-made, they were produced in great numbers and were exported to various places around the Mediterranean, including our islands. However, such lamps could also have been produced locally from imported moulds or perhaps from locally-made moulds fashioned on imported examples.

Meaning of the dove

Without excluding the possibility of its having been simply decorative, the dove with spread wings on the lamp may also have been intended as a Christian symbol. Having previously been an attribute of the deities of love like Astarte and Aphrodite/Venus, the white dove became (in Christian contexts) the symbol of the spirit of love or the Holy Spirit.[14] But, in our case, its meaning should be sought more within a funcrary context.

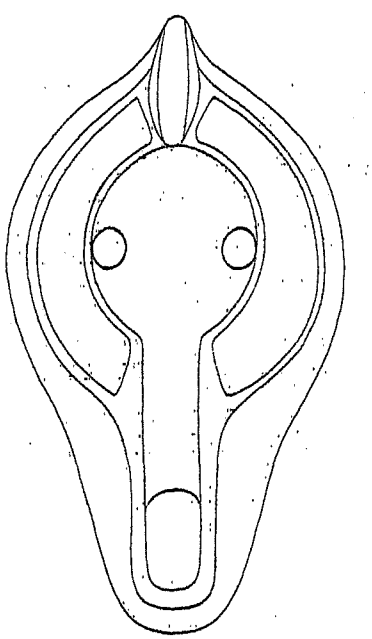


Fig. 4. The 4th – 6th centuries A.D. North-African red-ware lamp type which the Ta' Sannat lamp belonged to

Pagan tombs already included doves – amongst other creatures – as part of their decoration. However, Titus Flavius Clemens, better known as St Clement of Alexandria (an early Church Father; *ca.* mid-2nd century – *ca.* early 3rd century A.D.) pointed out that certain artistic representations, like the dove or the fish, were particularly suitable for Christians.[15] As a matter of fact, several of them, including the dove, became symbols in catacomb art, though bearing a new meaning. As a Christian import, the dove found its place on Christian sarcophagi and on catacomb walls as a symbol of peace and deliverance: deliverance from death and, hence, implying Resurrection, a concept of supreme importance in the Christian faith. It is with this meaning that the dove appears in scenes of Abraham sacrificing his son Isaac whereby Isaac was delivered from death (by being sacrificed) through his father's faith in God, and in scenes of Noah in the ark whereby he and his family were delivered from the flood and, consequently, from death.[16]

Presumably carrying the same meaning, the dove appears also as a decorative motif on Christian burials in underground cemeteries in North Africa from where red-ware lamps like ours used to be imported. For example, one can mention the underground cemetery areas of Sousse/Hadrumetum in Tunisia which stretch over 1.5 km and contain over 10,000 burials. Each burial niche is often decorated with a dove or a fish motif, or a monogram and cross.[17]

The dove also makes its appearance – presumably also with the same meaning – on tombs in some of the Maltese Christian catacombs. For example, a canopied tomb (of the *baldacchino* type) inside one of the *triclinia*[18] in St Paul's catacombs at Rabat (Malta) is decorated with two olive branches one of which seems to be carried by a dove. The *exedra*[19] in the same *triclinium* carries traces of decoration which probably shows a palm branch and a dove carrying an olive

branch. The façade of a tomb inside St Agatha's catacombs, also at Rabat, Malta, is decorated with two birds, one of which is possibly a dove. The same subject is found again on a fresco decorating a niche in front of a *triclinium* in the same catacombs. On a canopied tomb (of the *baldacchino* type) in St Catald catacombs, at Rabat, Malta, there are traces of two painted birds: possibly two doves. Another tomb inside *L-Abbatija tad-Dejr* catacombs, situated in the limits of Rabat, carries what appears to be an image of a dove on one of its sides. The dove also appears carrying an olive branch in its beak on a large fragment of a lamp found in St Agatha's catacombs. This lamp fragment is of the same type of lamp as the one found at Ta' Sannat.[20]

Thus, looked upon within a funerary context like our burial, the dove on our oil-lamp may possibly indicate faith in deliverance from death/in Resurrection.

Alternatively, but also within a funerary context, the use of the dove may have also been intended as a symbol of the soul departing from the body of which it came to be a recognised symbol from the 4th century A.D.[21]

The other finds

On the other hand, the discovery of the *oenochoe* and jar in this possibly Christian context may recall the earlier Greco-Roman pagan custom of liquid offerings to the dead whereby wine was actually considered as life-giving, ensuring immortality, and substituting blood which appeases the spirits of the dead.[22] This might be an indication of a belief in an afterlife and, therefore, in consistency with the possible meaning of the dove as expressed above.

The use of the dove symbol on the lamp and the deposition of the *oenochoe* and jar in our burial may thus be possible examples of syncretism whereby previously pagan representations and customs are adopted, often given a new meaning, and maintained by early Christians.

The apparent isolation of the burial

As already mentioned, lamps like the one mentioned in the Museum Annual Report did not make their appearance before the 4th century A.D. Moreover, the burial's apparently isolated location may possibly reflect the prohibition of Christian burials amongst pagan ones. In such a case, apart from the fact that the burial does not appear to pre-date this prohibition, its isolation viewed in the light of the said prohibition may perhaps also confirm the mixed presence of Christians and pagans in Gozo at that time: a time of gradual transition from paganism to Christianity. The prohibition was addressed to the Christians by the Council of Laodicea (*ca.* 360) and by St Hilary of Poitiers (bishop and Church Father, *ca.* 315 – *ca.* 367) towards the middle of the 4th century A.D. Christians were even prohibited from visiting pagan cemeteries.[23] However, the burial's apparent isolation could perhaps be simply explained in terms of an isolated rural habitation in that area, or both. It is to be pointed out that graves – whether rich or poor – in the country districts of the Roman world could be found, more or less, isolated.[24]

Dating and interpretation

In view of the above, the burial discovered in the quarry at Ta' Sannat does not seem to pre-date the 4th century A.D. (*terminus post quem*). Perhaps it does not pre-date the middle of the 4th century either. On the other hand, the discovered items and, in particular, their possible respective meanings in the light of their context and their being apparently in consistency with each other, taken together with the burial's apparent isolation which might be a reflection of the prohibition of burial amongst pagans, may be construed as a possible indication of a Christian context.

Notes

1 N(ational) A(rchives) G(ozo) / P(olice) D(epartment) / 1 (Police Occurrences) / 194, 38v – 40r. 45v – 46r, *M(useum) A(nnual) R(eport)*, (1928-9), V, and NAG / P(ublic) W(orks) / 02 (Correspondence) / 13, 260. Another lamp (marked: SAC / 20.7.1992) of the same type and also carrying a capital 'B' on its base is to be found at St. Agatha's museum in Rabat (Malta). This had been found in St Agatha's catacombs (adjacent to the museum) on 20th July 1992. This lamp and the one from Ta' Sannat may have possibly originated from the same workshop and perhaps even manufactured by the same potter (see reference 2 below).

2 D. M. Bailey, *Greek and Roman Pottery Lamps*, (London. The Trustees of the British Museum, 1963), 23-24.

3 NAG/PD/1/194, 38v – 39r and NAG/PW/02/13, 260.

Also, verbal communication from Salvinu Mercieca, known as *Tal-Ġermaniż*, from Munxar. At the time of the discovery of the burial, which he remembers well, Salvinu, then aged 16 years, was employed in his father's quarry situated near the one where the burial was discovered.

4 Verbal communication Salvinu Mercieca .

5 J.M.C. Toynbee, *Death and Burial in the Roman World*, (Baltimore. The Johns Hopkins University Press, 1996), 66 (pl.19), 69 (pl.24), 87, 101-102.

6 A.A. Caruana, *Ancient Pottery from the Ancient Pagan Tombs and Christian Cemeteries in the Islands of Malta*, (Malta. Government Printing Office, 1899), pl. XXI (5).

7 Verbal communication Salvinu Mercieca

8 M. Buhagiar, *Late Roman and Byzantine Catacombs and Related Burial Places in the Maltese Islands*, BAR International Series 302, (Oxford. Archaeopress, 1986), 24, 56, 61 (Fig.14a).

9 Ibid., 24, 338, 340, 350, pl. 28b. See also: G.H. Musgrave, *Friendly Refuge*, (Sussex. Heathfield Publications, 1979), 77. 91.

10 Bugeja A., 'Floor Tomb at il-Wied ta' Kandja', *The Oracle*, issue 1, (2000), 38.

11 *MAR*, 1935-6, XXV.

12 M. Buhagiar, 'Early Christian and Byzantine Malta: Some Archaeological and Textual Considerations' in V. Mallia Milanes, (ed.) *Library of Mediterranean History*, 2 vols. (Malta. Mireva Publications, 1994), I, 110.

13 Musgrave, 100.

14 Keel O., 'Animals in the Bible and the Ancient Near East', *Minerva*, vol. 13 no. 1, (2002), 25.

15 T. Flavius Clemens, *Paedagogus*, 3.11.16.

16 J. Stevenson, *The Catacombs: Rediscovered monuments of early Christianity*, (London. Thames and Hudson, 1978), 55, 58, 60, 67-68.

17 N. Finneran, *The Archaeology of Christianity in Africa*, (Gloucestershire. Tempus Publishing Ltd, 2002), 53.

18 The *triclinium* (plural: *triclinia*) was the place in catacombs where funerary meals were held around an agape table when someone died or, else, on his/her death anniversary. But here (i.e. in funerary contexts), the term *triclinium* was borrowed from the Roman secular world where the *triclinium* was the dining room to be found in a Roman house and wherein the diners reclined on couches (*klinai*) to eat. Reclining to eat was and still is a nomadic habit. Borrowed from the east, the practice of reclining on couches was to become a normal feature of the Greek symposia and, later, was to determine the design of dining rooms (J. Boardman, *The Greeks Overseas: Their Early Colonies and Trade*, 4th edn, [London. Thames & Hudson Ltd, 1999], 83).

19 The *exedra* was a curved space or wall resembling a circular apse. In Roman urban architecture, *exedrae* were furnished with circular marble benches providing place for discussion and conversation.

20 Buhagiar (1986), 57, 74, 78 (Fig.20b), 80, 214. See also: id., 'The Maltese Paleochristian Hypogea – A Reassessment of the Archaeological, Iconographic and Epigraphic Source Material' in R. Ellul Micallef and S. Fiorini, (eds.), *Collegium Melitense Quatercentenary Celebrations (1592 – 1992) – Collected Papers Contributed by Members of the Academic Staff of the University of Malta*, (Malta. The University of Malta, 1992), 166-167.

21 S. Gibson, *The Cave of John the Baptist*, (New York. Doubleday, 2004), 64.

22 A.C. Rush, *Death and Burial in Christian Antiquity*, (Washington, D.C. The Catholic University of America Press, 1941), 115-116, 118-119.

23 Stevenson, 10.

24 Toynbee, 73.

Acknowledgments: The author would like to thank Joseph Calleja who kindly produced the artistic impressions. The one showing the discovered tomb is based on the information kindly supplied by Salvinu Mercieca, 'Tal-Ġermaniż', from Munxar, who, as shown earlier, remembers the find well. The author is also greatly indebted to him.

Le modèle architectural du Tarxien reconstitué par Ugolini: la solution?

Etude comparative de deux représentations architecturales de l'époque des temples Maltais

Roger Le Chevretel

Abstract

Two fragments of evidence are compared. The first is a Globigerina Limestone fragment found at Tarxien, that appears to represent the plan of a rectilinear building resting on a circular podium. A hypothetical reconstruction was proposed by Ugolini to suggest what the entire model may have looked like. Since then however, the model has attracted only limited debate.

The second piece of evidence is one of the lithographs published in 1787 by Jean Houel in his monumental *Voyage Pittoresque des isles de Sicile, de Lipari, et de Malte*. It shows a plan of a circular building of megalithic construction. Within the megalithic circle, traces of a rectilinear structure are clearly shown.

Attention is drawn to the striking similarity between these two representations, which only appears to have been noted once in the existing literature, in a passing reference by Ugolini.

A new interpretation is then proposed. It is suggested that Houel's illustration faithfully represented the Xagħra Stone Circle in Gozo. It is further argued that the model from Tarxien represented a building belonging to the same category as the Xagħra Circle. It is proposed that the rectilinear structures that appear in both examples are representations of buildings that formed part of the superstructure of funerary complexes such as the Xagħra Circle or the Ħal Saflieni Hypogeum. Such buildings may have performed functions related to the first stages of the burial ritual.

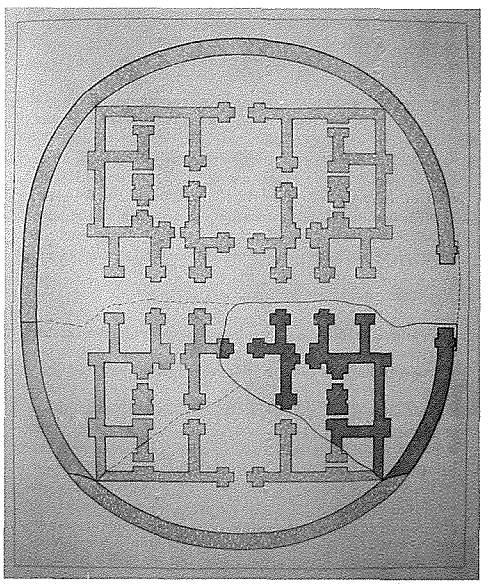


Illustration no. 1. A hypothetical reconstruction by Ugolini based on limestone fragment found at Tarxien

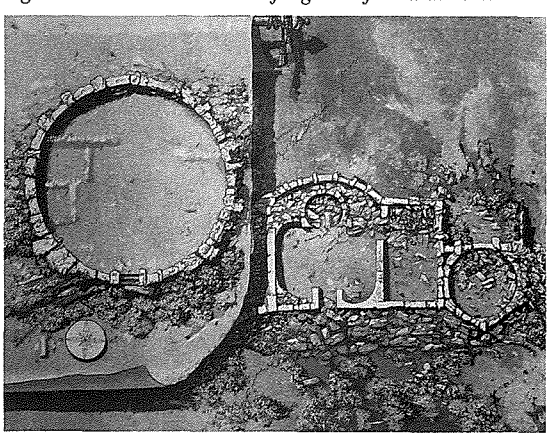


Illustration no. 2. Detail from Plate CCLI, vol. IV, Voyage Pittoresque des isles de Sicile, de Lipari, et de Malte

Le premier de ces documents est un fragment de globigérine representant, en faible relief, une construction complexe élevée à l'intérieur de ce qui apparaît être une enceinte-plan que complèta Luigi Maria Ugolini par une double projection symétrique tant en suivant l'axe des x que celui des y (illustration no. 1 avec, en grisé, le fragment de calcaire mis en place à l'échelle voulue.)

Or, ayant vu, il y a quelques temps déjà, une reproduction de la "vue aérienne" du Cercle de Xagħra, lithographie de Jean Pierre Houel (illustration no. 2), il nous est apparu qu'une forte similitude existait entre ce graphisme et la reconstitution d'Ugolini.

Ces deux documents, en effet, présentent une surface fermée par un grand mur d'enceinte, plus ou moins circulaire, percé d'une porte s'ouvrant sur la droite de l'ensemble qui, étant donné l'orientation de la production de Houel, nous permet de la situer à l'Est. Seul Ugolini a noté brièvement une similitude entre cette maquette et le dessin d'un site près de Ġgantija, et qui doit correspondre au Cercle de Xagħra.[1]

Certes, l'indication du tracé des constructions internes semble assez succincte dans le graphisme de Houel. Toutefois, il est permis de penser qu'à l'époque où fut effectuée cette gravure, seuls quelques vestiges en subsistaient encore et ce, d'autant plus, qu'actuellement, nous n'avons, comme seuls témoins de cet ensemble qu'une dalle de taille médiocre attribuée au mur d'enceinte dont elle serait le seul vestige et les quelques pierres constituant un seuil isolé.

A ce sujet, il nous faut ici nous élever contre une critique qui nous semble injuste concernant l'oeuvre de cet artiste auquel on a reproché un parti pris d'un rendu trop parfait, trop régulier, sacrifiant à l'esprit géométrique de son époque tant en copiant la structure régulière du mur d'enceinte de Ġgantija avec son alternance rythmée d'une pierre en long et d'une pierre en boutisse, qu'en donnant l'aspect d'un cercle trop parfait à l'ensemble.

Or, concernant ce dernier point, on ne peut nier que le cercle soit la figure géometrique la plus facile à obtenir, puisque, pour ce faire, il suffit d'un centre fixe et d'un cordeau. Quant au rendu artificiel de la structure même du mur du Cercle de Xagħra, un examen minutieux du graphisme de Houel, nous montre que ce rythme, pierre en long, pierre en boutisse, est loin d'être systématique, en particulier au Nord de la muraille comme au Sud-Est où sont ici figurés les grands blocs que l'on retrouve dans d'autres représentations du site, comme chez Charles de Brochtorff.

Houel a donc fidèlement représenté ce qu'il avait vu et cela nous conduit, en nous reportant également à la maquette d'Ugolini, à considérer que, conjointement au développement des Temples, ont été construits de vastes ensembles, également sacrés, enclos dans de monumentales murailles mégalithiques et composés d'une série de bâtiments plus ou moins complexes qui surmontaient de vastes nécropoles comme Ħal Saflieni ou le Cercle de Xagħra, ceux-ci devant répondre aux besoins tant funéraires *stricto sensu*, que découlant des pratiques religieuses.

Ainsi peut-on raisonnablement envisager que, comme pour l'Egypte pharaonique, on se trouve ici devant un "village des morts" où tout ce qui avait un rapport avec le rituel funéraire était rassemblé, qu'il s'agisse de la fourniture d'objets votifs, (coupes, vases, statuettes), ou du traitement même du corps du défunt - celui-ci comportant la toilette: on lave le corps, on l'enduit d'ocre rouge et on le met en position fléchie avant que ne s'installe la rigidité cadavérique. Enfin, on le dispose dans une chambre de dessication, celle-ci étant activée par un système de courants d'air sec.[2]

A cela, il nous faut ajouter la permanence d'un personnel plus directement concerné par l'entretien, le déblaiement partiel des tombes pour ménager un nouvel espace libre afin de pouvoir y déposer les corps des nouveaux défunts.

Parallèlement à ces tâches, un clergé specialisé devait obligatoirement y avoir sa place, aussi bien pour les cérémonies funèbres que pour répondre aux demandes oraculaires faisant appel à l'esprit des morts ou à la divinité Chtonienne.

Ainsi, se trouverait-on devant deux catégories de monuments s'etant développés conjointement – sinon toujours en corrélation - d'une part, les temples, dédiés a une divinité personnifiant la vie – et de l'autre, à une divinité du monde souterrain, régnant sur le monde des esprits - sachant qu'il pouvait s'agir d'une seule entité sous ses deux aspects opposés et complémentaires.

Notes

1. L.M. Ugolini, *Malta: origini della civiltà mediterranea*, (Rome. Libreria dello Stato, 1934), 27.
2. Il semble que, dans l'énumeration des artefacts retrouvés dans les tombes, aucune mention n'ait été faite de vestiges de tissus quelconques en accompagnement – ce qui semblerait suggérer que ces corps étaient inhumés nus. Cela, pour nous, conforte l'opinion de Sir Themistocles Zammit – opinion que nous partageons et selon laquelle on était, a Ħal Saflieni, en face d'inhumations secondaires. Celà semble logique, car la puanteur d'enfouissements directs n'aurait pu permettre les pratiques cultuelles qui découlent de l'organisation des salles ornées destinnées à un certain public. De plus, cette décomposition aurait pollué l'eau du puits. Notre hypothèse de salles de dessications, dans ce but, nous semble préférable a celle d'un enterrement provisoire. L'utilisation massive d'ocre avait peut-être un effet actif dans ce dessèchement des corps – son abandon presque total à l'époque du Tarxien n'était peut-être pas dû seulement a une raréfaction des importations, mais peut-être, aussi, à un progrès technique dans cette pratique.

Archaeological discoveries at Marsa over the centuries

Timothy Gambin

Introduction

Marsa lies at the head of the Grand Harbour of Malta nestled between the sea and the town of Hamrun. The vast floodplain lying behind the inner reaches of the harbour is referred to by locals as il-Marsa tal-Ingliżi and covers the area which is currently occupied by the Marsa Sports Club.[1] This same floodplain is the largest catchment area of freshwater in the Maltese islands. Large valley systems drain into the floodplain and subsequently into the sea at Marsa. Tonnes of sediment are transported across the plain annually making it the fertile area it is.

Today, one does not associate the area around Marsa with rich archaeological heritage. Centuries of heavy industrial and infrastructural development, including shipbuilding and power generating facilities, have greatly influenced the evolution of the area. Added to this one must also keep in mind natural causes, including the abovementioned heavy sediment deposition, which have changed the topography of the Marsa area. Some of this development, such as the nineteenth harbour facilities, has become important in its own right and today one can also refer to the industrial heritage of the Marsa area. However, these relatively recent additions were built over an area that, as shall be communicated in the course of this paper, is extremely rich in archaeological heritage. In some cases, it is these same recent developments that have brought to light some of the archaeological discoveries described below.

The first reference to large manmade structures of some form existing in the environs of the Grand Harbour can be inferred from a written description of the island penned by Jean Quintin D'Autun. In his 1536 publication he describes two ancient temples that were still extant and visible in the first decades of the sixteenth century, one at the southern harbour (Marsaxlokk) and the other as situated between the castle and the town.

"The foundations can be seen in many places: stones of stupendous height and width. I think that the temple of Juno, as one can see from the remains which still exist, could be considered not only as one among the great, but also among the magnificent temples of antiquity; it is situated about halfway between the town and the castle. The ruins lie scattered through many acres of land; the foundations of the temple cover a large part of the harbour, even far out into the sea, built there on a hilltop, on a plain, and sheltered from winds on all sides by very steep slopes. The name of this place is very difficult to pronounce except by the local Maltese tongue. On the hilltop there is a shrine dedicated to the Blessed Virgin, called "Ta' Qort".[2]

This description has, since its inception, been taken to mean that the remains described by Quintinus lay between the castle of St. Angelo and its suburb Birgu. There are, however, a number of difficulties with the placing of these remains in this area. Firstly, the author describes the remains as lying half way between the castle and the town; in early modern times only Mdina was referred to as a town whereas Birgu was not: *burgi insule Meliveti* (1357); *in contrata burgii prope*

castrum maris (1420); *suburbia castri maris* (1466).[3] On the other hand, the very meaning of the term Mdina (from Medina) is town.[4] Added to this one must here consider that, on a peninsula as narrow as that of Birgu, there probably did not exist many acres of space between the castle and its suburb. Also, the sea and mud in the area are not conducive to supporting large structural remains as those described. The bedrock drops dramatically towards the centre of the submerged valley that is today known as Dockyard Creek .

It is highly likely that Quintin D'Autun was referring to an area that coincides with Marsa. There are a series of archaeological remains in the area that fit his description as well other factors, such as place name evidence, that point to Marsa as being the area described in the passage. On the plain of Kordin to the SE of the Grand Harbour there once stood no less than three Neolithic structures. Observed in the early 1500s, these must have constituted a formidable sight similar to other substantial Neolithic sanctuaries elsewhere on the island. It is therefore not surprising that the author of the passage describes the stones as being of "stupendous height and width". The remains that have been somewhat enigmatic are those referred to as "lying far out to sea". However, maps and nautical charts from the nineteenth century show this area as being muddy rather than awash.[5] This seems to indicate that the process of siltation in the Marsa area was not yet complete and may have been even less so in the early sixteenth century when the account was penned, meaning that any structures present in the area would have been visible. It is therefore plausible to consider the structures described in 1536 as forming part of the same structure described by Abela over a century later.

In 1647, Commmendatore Abela published the first reference that sheds light on what the abovementioned remains may have been... He describes a *molo di grossissime pietre edificato su la sponda del mare per un tratto di mille e cinquecento passi fatto in tempo de'Romani.*[6] It would seem that the author reached this conclusion based on a fragment of a marble plaque that read *in statione* [...] *mille* [...] *quincent pass* [sic]". Only some of the mole was extant at the time that he was writing *E n'appare fin'oggi qualche vestigio delle pietre nella punta del Cortino.*[7] One can be almost certain that the area described in the passage as 'Ta' Qort' coincides with Kortin, Qortin and Cortino (all toponymns used for the area around the present day power station).

During the latter part of the eighteenth century, some of the most important finds in the area were made. Count Barbaro's 18th century publication of the old remains on Jesuits' Hill (a later toponymn that coincides with the area of Qortin, Kortin and Cortino) contains a detailed and accurate description of a massive complex of Roman warehouses. This site was discovered in relatively good condition with the arched roof still surviving in parts of the main building. The main edifice was spread over a large area and consisted of a central chamber with corridors on each side. In turn, these corridors provided access to a series of chambers, precisely five on either side. These chambers had roofs that were supported by three arches and each room measured approximately nine by four metres or 36 square metres. Attached to this large complex was a substantial structure that seems to have been in a lesser state of repair and was described simply as *rovine di fabriche.*[8] The roof of this one massive room seems to have been supported by a series of five central columns (or pillars) and one also notes the remains of a smaller room.

The last two rooms and the NE portico were built over excavated chambers, which at the time of their discovery were filled with fresh water. Apertures for the retrieval of water were situated in the corridors of the main buildings. The ceilings of these two chambers differed, one was vaulted (*fatta a testuggine*) and the other consisted of a series of arches built from large stones (*pietre enormi*).[9] The second building of the complex also had an excavated chamber under one of the rooms that was dry at the time of the discovery and contained a significant number of amphorae in good condition.[10] The third large underground chamber was situated under the abovementioned *rovine di fabbriche* attached to the large building. Among some of the explanations given by Barbaro is the possibility of this area being a reutilised tomb.[11]

From the opposite extremity of the main chamber ran a large passage measuring approximately three metres wide and forty-three

metres long that was oriented to ENE, and lay circa nineteen metres (from its end) in the same direction. A second complex was situated off this passage although no direct entrance from the latter can be identified in Barbaro's plan. The entrance to this second complex enjoyed the same orientation of the abovementioned passage. Access to the five rooms would have been via a large vestibule measuring twenty by three metres with each room measuring approximately three by fourteen metres. To the north of these rooms are two narrow corridors that were also accessible from the vestibule whereas to the south are a series of four rooms that are drawn by Barbaro as incomplete. This would indicate that these were probably in a state of ruin when the discovery was made. The narrowest of these rooms measured two and a half metres whereas the widest measured approximately five metres across.

A third complex of buildings, separate from both the aforementioned structures lay to the south of the main complex. The entrance to this building was through a vestibule that measured eight by two and a half metres. From here one could access the three chambers that measured approximately nine by four metres. The dividing walls contained pillars rather than columns and these were made from large stones placed one over another. Large building blocks were used for the rest of the structure and the simple architecture of this particular building led Barbaro to conclude that this highlighted the antiquity of the building *manifesta la rimota antichita' dell'edifizio*.[12]

One of the earliest and accurate hydrographic surveys in the area of Marsa was carried out in the second decade of the 1800s by Captain W.H. Smyth and subsequently published in 1823. It shows a series of 'objects' that fouled the seabed in the area at the point off the Qortin headland.[13] These features are clearly marked and may well correspond to some of the structures observed by Quintinus and Abela. Dredging works carried out in the 1860s in the area confirm the presence of port structures present within the mud deposits. Whilst dredging in the area Mr Gabrielli, the contractor entrusted with the removal of mud for the creation of a harbour extension from the area, consistently complained that he had to remove large stone blocks from beneath the seabed. It is not known exactly to what structure these blocks belonged to but contemporary reports state that many of these blocks had considerable traces of pozzolana on them.

Other evidence pointing to intense human activity in the area includes a series of fishponds discovered around Kortin Hill.[14] In 1865, the government at the time "was informed that Mr Gabrielli has lately met with some further obstructions in his operations of dredging in the shape of two ancient fish ponds, and that he is, in consequence, about to put in a further claim of £2,000 or £3,000 to defray the extra expense of removing the masonry".[15] The contractor may have inflated the sum requested but it does represent a rather large amount of money for the time and reflects the substantial nature of the structures discovered.

Confirmation of the existence of structures at the foot of Kordin Hill (possibly some of the structures described by Quintinus) were to be brought to light in the second half of the nineteenth century when dredging machines working in the area brought to light a number of architectural remains of which only two (partial) marble columns and the torso of a small marble statue were retained. One column measures approximately 165 cm in height and the other measures approximately 105 cm in height and 52 cm in width. A contemporary newspaper reports the discovery of the torso of a statue originally thought to be that of the Goddess Diana.[16] In November 1877 during construction works that were taking place in the same area a whole pillar of identical material to the aforementioned pieces was uncovered from "under six feet of earth".[17] Since its discovery, this column has been kept in a private collection. Although one cannot define the exact nature of the structure that once stood at the foot of this hill there can be no doubt that the discovery of these columns in this area point to the presence of a substantial building at a prominent place that dominates the entrance to the harbour at Marsa.

A large Roman burial complex was discovered in 1874 on the side of Jesuits' Hill and is datable to the second and third centuries AD. This complex contained over 50 tombs and its presence confirms the continued occupation of a site in close proximity to the Marsa Harbour (Fig. 1).[18] It is uncertain as to whether

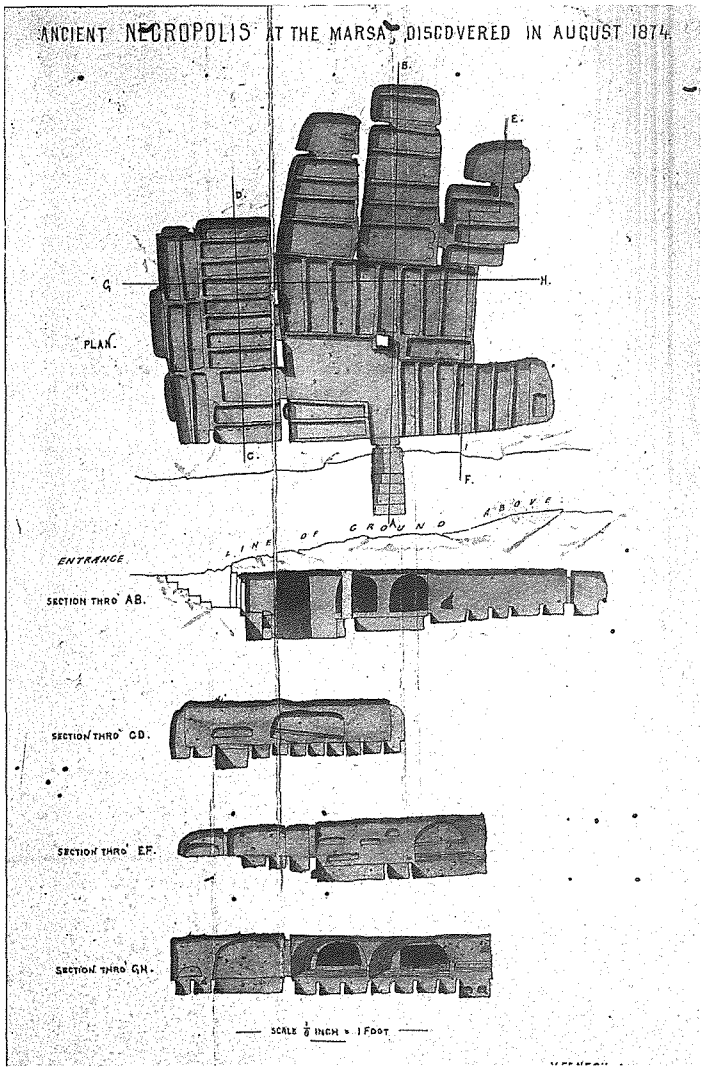


Fig. 1. Burial complex at Marsa as drawn and depicted soon after its discovery in the late 19th century

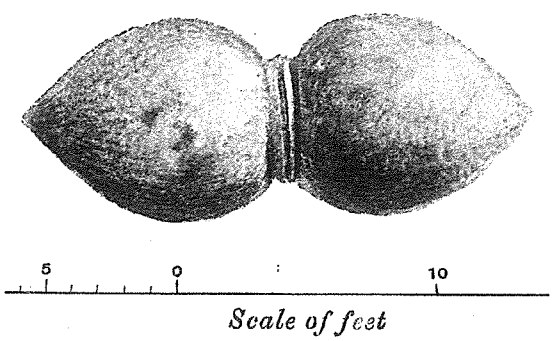
parts of a tomb still visible in a section of rock on the side of the road leading to the power station form part of this same complex. The same uncertainty surrounds another discovery, this time datable to the 1960s when part of a catacomb complex was uncovered during works near the power station (Plate 1). In 1888, Caruana describes very interesting discoveries in the Kortin area. These include burials within dolia, placed lip to lip, with a body inside (Fig 2). In itself this discovery is very important. Dolia are usually used as storage jars, buried up to their rim within warehouses. Here it seems that these had been dug up and reused for burials. Caruana states that many of these dolia burials were discovered in the area of the gasworks that were being developed in the area.

Nearly a century after the great harbour extension other work on the island's infrastructure contributed to the discovery of further structures that were probably part of the harbour complex. In April 1939 "during the excavation of a trench for the laying of foundations in a field at Race Course Road, Marsa, at a depth of about ten feet from the surface, remains of a Roman building were uncovered".[19] The limited information available contains a description of a floor

Plate 1. Possibly the same burial complex depicted in Figure 1 which was 'rediscovered' during civil works which were being carried out in the area

covered with clay tiles and of rectangular pits covered with plaster and cut into the bedrock. The area contained "a great quantity of potsherds of the Roman type" as well loose tiles and plaster.[20] It is not possible to precisely define the use of the building but it is seems to be related more to industrial activity rather than to storage facilities.

In the mid 1950s further remains were unearthed in Marsa. During the laying of foundations for a new school workmen uncovered a building that "covered an area of at least 170 feet [51 metres] in length and 100 feet [30 metres] in width and consist of the lower courses of walls in 'opus quadratum'. The walls uncovered so far appear to belong to large rectangular rooms or enclosures and the quality and workmanship of the Globigerina limestone blocks with which the walls are constructed show that the building originally constructed on this site must have been of some importance".[21] Very large quantities of pottery, including "amphoras, flagons and storage jars" were retrieved from this site. What is of interest here is that some of the pottery from this site showed signs of being water worn and was encrusted with marine growth.[22] This is interesting because such remains would indicate that these structures were once submerged.



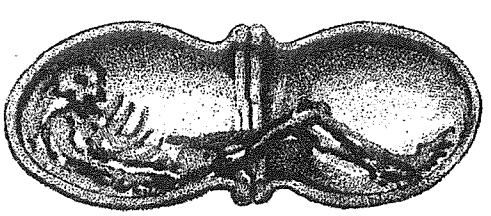


Fig 2. Dolia burial as discovered in situ during the late 19th century

One can look at two possible explanations: firstly that the land on which these structures were built subsided over the centuries and lay for a period (until the silting up of the area) below sea level; alternatively, some of the ceramic material from this site originated from the great harbour works mentioned above from which "numerous pieces of earthen amphorae, urns and water jars, were also being continually brought up from the deep".[23] The mud was dumped in a variety of places in and around the area so it could well be that some the ceramics discovered in this site originated from the spoil of the harbour dredging in the 1860s. Despite the uncertainty regarding the origin of the ceramic deposits from this site I believe that there can be little doubt that the structures described in the brief report constituted the remains of a *horrea* or Roman warehouse complex. It is similar in dimensions to the *horrea* at Myra except that the latter is slightly larger.

Further ancient buildings were discovered in the area in 1959 when "during building operations along the north side of Racecourse Street, Marsa [...] several lengths of heavy masonry, buried in levels containing nothing but Roman sherds, came to light [...] they seem to represent the remains of massive warehouses".[24] Although the brief report states that "detailed plans and drawings were taken for record purposes" these have since been lost and thus at this point in time it is difficult to comment further on the nature of these remains.

More recently, the 1993 excavations at Xatt il-Qwabar uncovered structural and other remains datable to the Middle Ages. However, the most significant find in Marsa in recent times occurred during the construction of a storm water channel near Xatt il-Mollijiet in 2005 (Fig. 4). The remains of stone foundations are similar to the structures uncovered in the early 1950s and may well be another section of the structure described above. It is highly likely that only a small part of a large warehouse complex has been investigated and that the rest is still buried in the surrounding environs. This site can, and indeed must, be considered as one of the most important archaeological sites in Malta that has yet to be fully investigated. From the few stretches that were uncovered

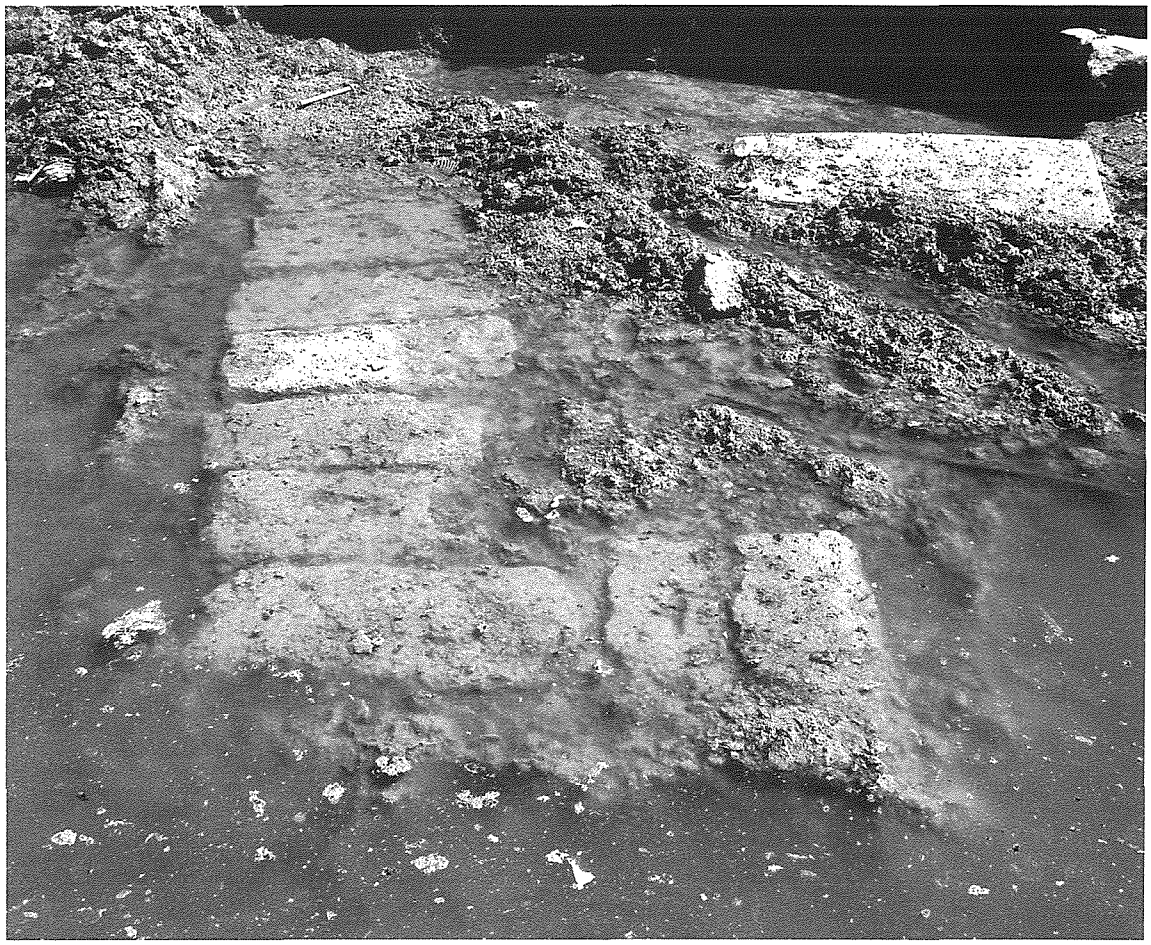


Plate 2. Architectural features related to the Roman port complex which were uncovered in 2005

in 2005 it was evident that the archaeological deposits are not only substantial but also, due to the anaerobic conditions of the sediments, very well preserved. Such a site deserves further attention that would involve various stakeholders contributing to a long-term project aimed at achieving a better understanding of Malta's Roman past.

Notes

1 The place name Marsa tal-Ingliżi originates from the recreational use of the area by the British in the nineteenth and twentieth centuries.
2 H.C.R. Vella, *The Earliest Description of Malta (Lyons 1536) by Jean Quintin d'Autun,* (Malta.1980), 23.
3 G. Wettinger, *Place-names of the Maltese Islands ca. 1300-1800*, (Malta. 2000), 54.
4 Ibid., 367.
5 *Mediterranean Sea Malta Valetta Harbours and the coast westward to Madalena Pt. Surveyed by Lt. G.R. Wilkinson and Mr J. Millard Mast. Assistant under the direction of Captns Graves & Spratt, R.N. 1860.* (London. Hydrographic Office. 1871, first pub.1861.)
6 G.F. Abela, *Della Descrittione di Malta: Isola nel mare siciliano con le sue antichità, ed altre notitie,* (Malta. 1647), 16.
7 Ibid., 17.
8 C.A. Barbaro, Degli avanzi d'alcuni antichissimi edifizi, scoperti in Malta l'anno 1768, (Malta. 1794), 4.
9 Ibid.
10 Ibid., 6.
11 Ibid., 9.
12 Ibid., 6.
13 W.H. Smyth, *The Hydrography of Sicily, Malta and the Adjacent Islands, surveyed in 1814, 1815 and 1816,* (London. 1823).
14 In the area known today as il-Menqa.
15 *Malta Times and United Services Gazette*, 16 March 1865.
16 *Malta Times and United Services Gazette*, 21 December 1865.
17 A.A. Caruana, *Report on the Phoenician and Roman Antiquities in the Group of the Islands of Malta* (Malta. 1882), 90.
18 *Malta Times and United Services Gazette*, September 1874
19 *Museum Annual Report* 1946-47, 3.
20 Ibid.
21 *Museum Annual Report* 1955-56, 7.
22 Ibid.
23 *Malta Times and United Services Gazette*, 8 November 1865.
24 *Museum Annual Report* 1959-60, 5.

Ognina – a puzzling prehistoric site in Sicily

David Trump

In 1965, Prof. Bernabò Brea of Syracuse excavated a site on the small island of Ognina, off the east coast of Sicily 12 km south of Syracuse, (Plate 1). He found two levels of prehistoric occupation, a lower one of the Early Neolithic Stentinello Culture, and an upper one dating to the Early Bronze Age. At these periods, however, it may not have been an island but rather a small promontory beside a sheltered inlet, making an ideal small port.[1]

The Bronze Age material contained none of the Castelluccio Culture, widespread in South-east Sicily at the time, but pottery which Brea recognised as being closely similar to some which John Evans had found in Tarxien Cemetery contexts in Malta.[2] He therefore suggested that the site had been refounded at this period, after standing empty since the Early Neolithic, by emigrants from Malta, who had probably established it as a trading post for their commercial interchanges with the Sicilians. This was adopted as the orthodox view by Italian prehistorians down to the present day.[3] However, some uneasiness was felt among those studying Maltese prehistory, on the grounds that there was very little evidence for a sea-faring tradition in that early period, and though there were undoubtedly some raw materials imported into the islands, this was on a comparatively small scale. [4]

In April 2002, I had the opportunity to visit the Museo Regionale Archeologico 'P. Orsi'

Plate 1. The Isola d'Ognina: Syracuse lies behind the Plemmirio peninsula in the distance

in Syracuse, and other museums in Agrigento, Gela and Licata where similar pottery had been reported, to see it for myself. Also, by this time, thanks to excavations at Skorba [5] and the Xagħra Circle,[6] much more was now known about the Tarxien Cemetery ceramic repertoire, particularly in its domestic aspect, than had been available to Evans back in 1956.

The large quantity of pottery from Ognina displayed in the Syracuse Museum is characterised by tronco-conic bowls with a flat base, straight out-sloping walls and a rim with broad internal bevel, often decorated with triangles, (Plate 2 and Fig. 2). The Maltese examples of the type, (Fig. 3 a, b and c), are referred to as Thermi bowls, perhaps better 'Thermi' bowls since, while Evans[7] had noticed how similar they are to examples from Thermi, a site on the island of Lesbos,[8] (Fig. 3 e), and Troy I,[9] (Fig. 3 f), those sites in the northern Aegean are a long way from Sicily and Malta. A safer name, since it begs no questions, would be thickened lip bowls.

Leaving for later consideration any possible connection with that distant area, there is no reason to doubt a cultural link between Ognina and Malta in the Early Bronze Age, separated as they are by less than 150 km of sea, a third of that distance being along the Sicilian coast. The only question is over interpretation: what the nature and direction of that link were.

Two things struck me immediately on examining the showcase of Ognina material in the museum in Syracuse. One was that the shape of these vessels was nearly identical to the Tarxien Cemetery thickened lip bowls, cf. Figs. 2-3, though there were some differences in the decoration. The second was the total absence of vessels with a sharply everted lip, even more characteristic of Tarxien Cemetery pottery on Maltese domestic sites and virtually universal in the type site cemetery. Twice as many sherds of this form were found in the Xagħra Circle as there were of the thickened lip bowls. Despite sharing the latter, in the absence of the former, in no way could Ognina be regarded as a typical Tarxien Cemetery site. Similarly, reports of 'Maltese' pottery from other Sicilian sites all referred only to these same thickened lip bowls, as at Castelluccio SR,[10] (Fig. 3 d) or even just pottery decorated with dot-filled bands at Casalicchio-Agnone AG,[11] Manfria AG,[12] and Contrada Paolina RG.[13] The two sherds from Castelluccio are certainly relevant here. Two from Casalicchio in the Licata museum have incised hatched pendant triangles, but on the exterior of vessels of a different shape. As the finds from the other two sites are not on public display, I have not been able to see them, so cannot comment. Tiné also quotes and illustrates a Tarxien Cemetery 'vasetto' from the Grotta Chiusazza SR [14] It has a design of dotted chequers resembling Tarxien Cemetery examples, but the vessel itself is unlike any Maltese one and is most unlikely to have come from those islands.

If this looks like a simple demolition job on the widely held belief that Ognina was in a real sense a Maltese site, if not on Maltese soil, something can be done towards constructing an alternative explanation. The first question, though, is what was Ognina if not a Maltese trading post?

For a start, although ideally situated for such, there is little in the excavated evidence to support the interpretation. If Ognina was providing commercial contacts between cultural areas, one would expect to find a mixture of cultural material, some from either side. As an example, on the site of Thapsos, on the same coast 10km north of Syracuse, plentiful pottery of the local Thapsos-Milazzese wares of a slightly later date were found in close association with Greek Mycenaean and Maltese Borġ in-Nadur vessels, as well as personal ornaments from a wide variety of sources. At Ognina, by contrast, there is plenty of what, to avoid begging questions, let us call Ognina ware, but virtually none of the distinctive Castelluccio fabrics being produced in all contemporary sites in this part of Sicily, nor, indeed, any other wares. If the Bronze Age inhabitants of Ognina were traders, with whom were they trading?

Again, as already mentioned, the decoration on Ognina thickened lip bowls, while including all the designs on Maltese ones, has a number of others not found in Malta. For example, one of the first sherds of this ware found in Sicily, at Castelluccio long before Ognina itself was discovered, has pendant dotted triangles (Fig. 3 d) on the bevelled lip, but these are not bounded by enclosing lines as is invariably the case in Malta, (Fig. 3 a). More commonly, various oblique incised lines are found at Ognina,

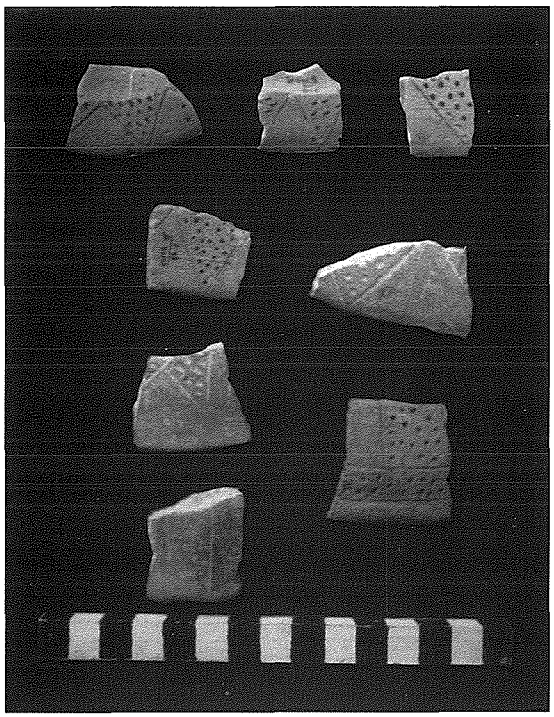


Plate 2. Thickened lip bowl and other sherds from Ognina

frequently in the Aegean, but never in Malta. What this is suggesting is that the origins of Ognina do indeed lie back in Thermi, or at least somewhere in the Aegean (remember the material from Troy I nearby), but that only part of the repertoire passed on to Malta, particularly the dotted triangles especially characteristic of Ognina. This decoration occurred only as a rare element in Thermi.[15]

Malta is at last coming into the picture, but in a rather different role, as recipient, not source. The next question is, when did this take place?

The thickened lip bowls with triangle decoration on the lip are widely regarded as belonging to the Tarxien Cemetery phase, and indeed the vast majority of them do. The Xagħra Circle provides a good example, with 115 rim sherds being recovered from the Tarxien Cemetery levels which overlay part of the site. However, three were found within the underground cave system which, in the absence of any single Tarxien Cemetery sherd of the characteristic everted lip form, was clearly abandoned and sealed off not later than the end of the Tarxien Temple phase. Similarly, five sherds of this type were found at Skorba in pure Temple Period levels, one indeed in a layer yielding nothing later than the preceding Ġgantija phase.[16] The best example of all is the one intact vessel of this form, differing only in having been given a pedestal, the famous bowl found when the decorated shrine and altar block were removed from the South Temple at Tarxien to the National Museum in 1956, (Plate 3 and Fig. 1 a).[17] This too was sealed within a Temple Period context.

What this is indicating is that a handful of sherds, presumably coming in as complete vessels, were reaching Malta in the Temple Period, along with the trade in flint, hard stone for amulets, red ochre and other materials which the islands lacked. This is not the place to document every sherd of exotic pottery found in Malta, the earliest going back to the Grey Skorba phase 2000 years earlier. Sufficient to say that there are remarkably few of these, even when the Temple Period thickened lip bowls are included.

In the other direction, I have many times repeated, with others, that no sherd of certain Maltese make had ever been found outside Malta, at least until the time of the Ognina finds or, if they are now to be disallowed, the Borġ in-Nadur ones from Thapsos and other contemporary sites,[18] including one from Ognina itself. However, amongst the thickened lip bowls in the Syracuse Museum is a single completely different sherd. It is from the vertical concave neck of a carinated bowl, dark in colour and of a thinner and finer ware, (Fig. 1 b). Though not highly polished, if found in Malta it would without question have been classed as a Tarxien Phase offering bowl, Evans shape 41, (Fig. 1 c).[19] There is nothing like it in the Sicilian repertoire. On closer examination in June 2003 (I could see it only through the glass of its showcase on the earlier visit), its fabric and surface treatment are quite unlike the Maltese ones, however closely it resembles them in shape. The best explanation of this is that it is a local copy of the Maltese form. Analysis of its clay would be useful. Again there is a good parallel for

Plate 3. The complete pedestalled bowl from Tarxien

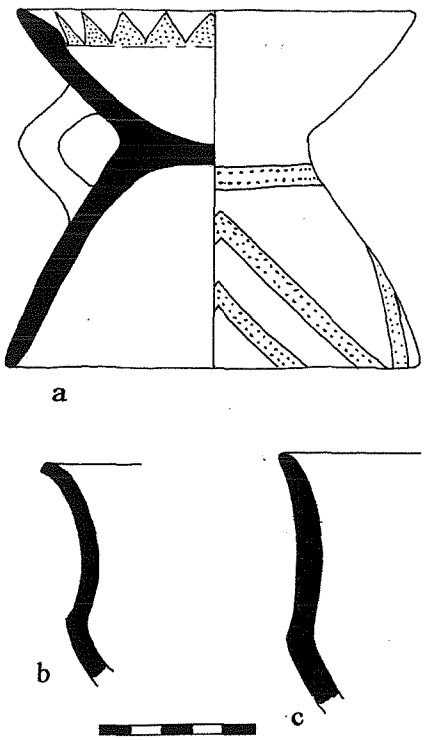


Fig. 1. a) Tarxien: pedestalled bowl with thickened lip; b) Ognina: the Tarxien-like carinated bowl; c) Xagħra Circle, Tarxien phase offering bowl

this in a later level at Ognina, which contains a few sherds of rough Borġ in-Nadur imitations as well as one undoubted import.

My interpretation of this evidence is as follows. For reasons we can probably never discover, a band of people sailed west from Lesbos or the adjacent mainland to the coast of Sicily, and settled at Ognina. They had some contacts with neighbouring peoples, both in Sicily and Malta, but these were only slight.

At a somewhat later date, a second group of settlers also sailed west, though their original homeland is as yet less clear. Evans thought it might have been in western Greece, either the Peloponnese or more likely further north.[20] I do not propose to go over this argument again, having no new evidence to add. They did not stop in Sicily but moved on to Malta where, for whatever reason - and these newcomers may even have been at least part of that reason - the remarkably advanced culture of the temple builders had recently collapsed, leaving a power and/or population vacuum.

In Malta the new settlers became what we now call the Tarxien Cemetery people. They almost certainly maintained trading contacts with Ognina, particularly for the copper they had by now come to depend upon. However, these links did not carry their typical pottery, the everted lip vessels, back to Sicily. Since they must have come via that island, probably calling in at Ognina itself, they may even have added a contingent from that site to their numbers before making the last sea crossing to their landfall in Malta and Gozo. The shared thickened lip bowl tradition on this interpretation would be explained by a common origin, particularly if some of the Tarxien Cemetery population had come from Ognina rather than direct from Greece. This would now seem more likely than that it was

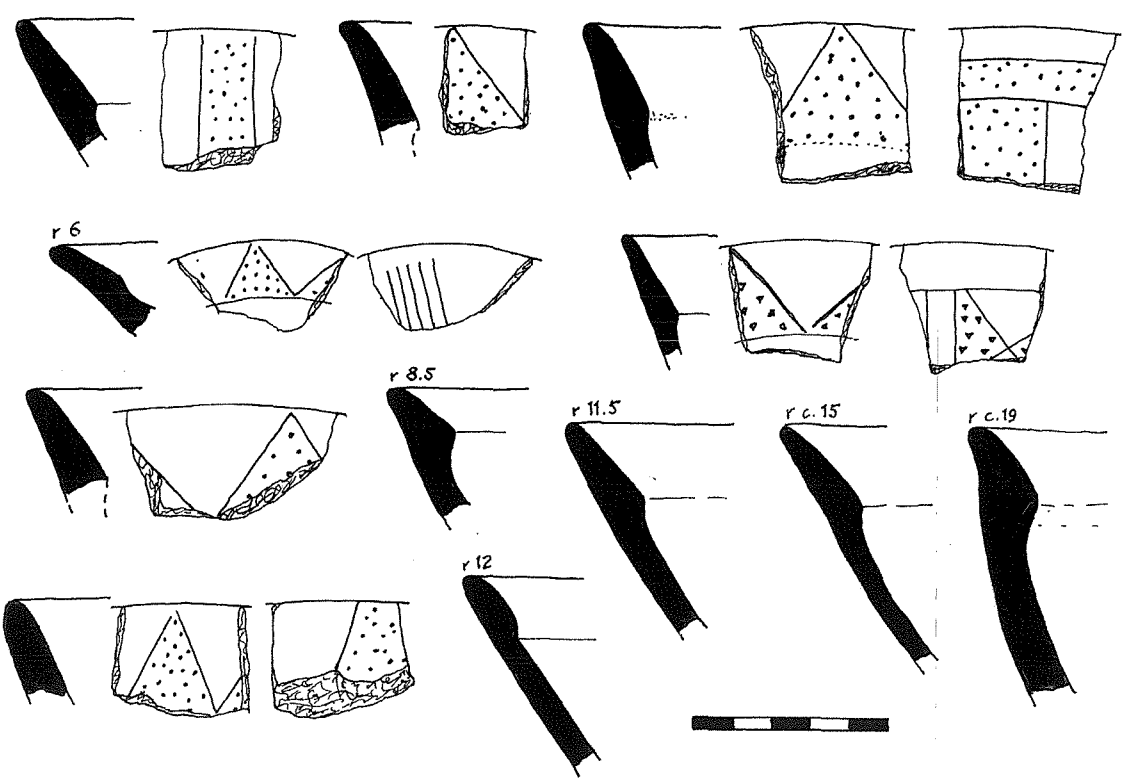


Fig.2. Ognina: thickened lip bowl rims, plain or with dotted triangles

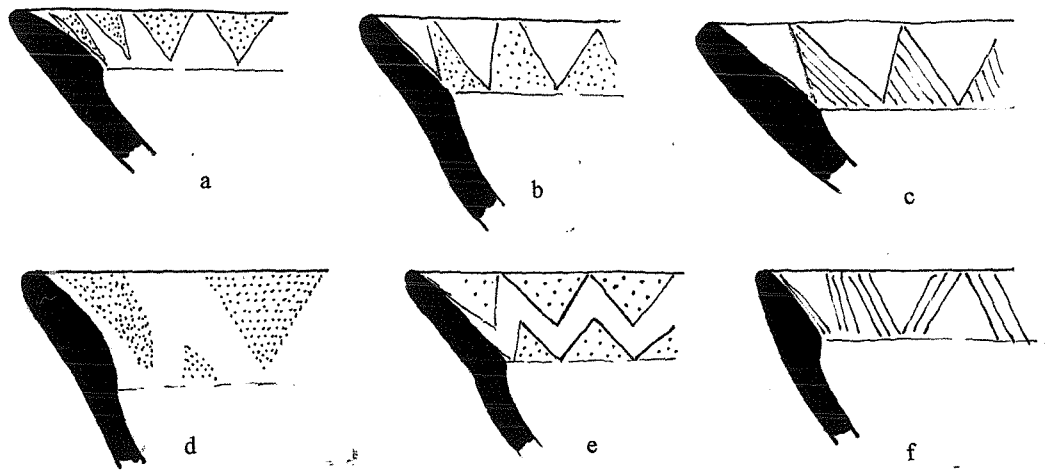


Fig.3. Decorated thickened lip bowls: a) Tarxien, b) Skorba, c) Xagħra Circle, all in Malta; d) Castelluccio, Sicily; e) Thermi, Lesbos; f) Troy

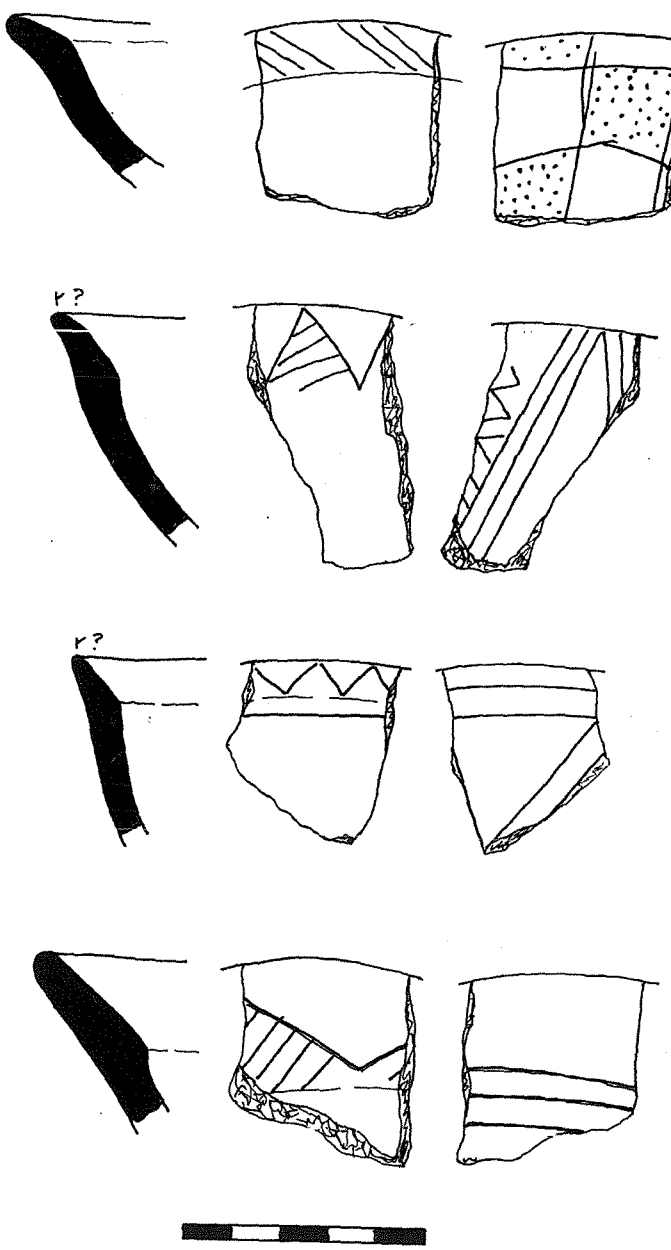


Fig.4. Ognina: thickened lip bowls with incised decoration only

due to copying from one area to another merely through trade contacts.

This all sounds very speculative, and indeed it is. There are, however, several lines of research which could throw further light on the issue, possibly even allow a firm decision between the alternatives in the not-too-distant future. For example, a re-examination of the Thermi material from Winifred Lamb's excavations on Lesbos back in the 1920s might well document more clearly the relationship of its pottery with that from Brea's at Ognina.

Although practically all the pottery discussed here would have been locally produced in the three areas under consideration, the Aegean, Sicily and Malta, a series of clay analyses might possibly reveal a few exotics, pointing back to their places of origin. The thickened lip bowls from the Temple Period in Malta, the most obviously foreign ones, would be the likeliest to yield information.

But if we have come closer to an answer for those first questions of whence and why, there are plenty more to follow. For example, when? What would be particularly valuable would be more accurate dates from radiocarbon, now that the Accelerator Mass Spectrometry (AMS) technique allows much greater precision, assuming that suitable samples for analysis could be found. If the Bronze Age occupation at Ognina could be shown to have started earlier than the Tarxien Cemetery phase in Malta, it would greatly strengthen the case presented here, but if later than Tarxien Cemetery, Brea would have to be declared the winner on points.

And finally, who? There is a much more exciting possibility here. DNA studies of modern, or decidedly better if possible, ancient, populations in Malta, Sicily, western Greece and the northern Aegean, could reveal the all-important relationship between the various peoples who produced the cultures we have documented archaeologically. Given that evidence, we might well be able to decide between them, or, of course, demonstrate that they are all wrong, and some quite different story has to be put together to replace them.

I sincerely hope, and with some confidence, that by redefining this problem, we may soon be able to offer a more firmly based account of the Tarxien Cemetery Culture in Malta, Ognina in Sicily, and how they fitted into the picture of the Early Bronze Age in the Mediterranean.

Notes

1 L. Bernabò Brea, 'Abitato neolitico e insediamento dell'età del bronzo nell'isola di Ognina (Siracusa) e i rapporti fra la Sicilia e Malta dal XVI al XIII secoli a.C.', *Kokalos*, XII, (1966), 40 sqq.; and id., 'Eolie, Sicilia e Malta nell'eta del bronzo', *Kokalos*, XXII-XXIII, (1976-7), 41 sqq.

2 J. Evans, 'The "Dolmens" of Malta and the Origins of the Tarxien Cemetery Culture', *Proceedings of the Prehistoric Society* XXII, (1956), 85-101.

3 S. Tusa, *La Sicilia nella Preistoria*, (Palermo. Sellerio Editore, 1983).

4 D. Trump, *Malta: Prehistory and Temples*. (Malta. Midsea Books, 2002).

5 D. Trump, *Skorba*. Society of Antiquaries Research Report XXII, (London. 1966).

6 C. Malone et al., forthcoming, *The Brochtorff Circle, Xagħra, Gozo*.

7 Evans (1956), 85-101.

8 W. Lamb, *Excavations at Thermi in Lesbos*, pl.IX, 189, XVI, 2, XXXII, 3, 4, 5, (Cambridge. Cambridge University Press, 1936).

9 H. Schmidt, *Trojanischer Altertumer*, Nos. 13, 14, (Berlin. Reimer, 1902), 1; and C.Blegen, *Troy*, pl.16, (London. Thames and Hudson, 1963).

10 J. Evans (1956), Fig.6, nos. 2 and 3, 85-101.

11 E. de Miro, 'Scavi e scoperte della Soprintendenza Archeologica di Agrigento', *Studi Etruschi*, XLII, (1974), 261.

12 P. Orlandini, 'Scavo di un villaggio della prima età del bronzo a Manfria presso Gela: rapporto preliminare', *Kokalos* VI, (1960), 29-30.

13 E. Procelli, 'Il complesso tombale di C. da Paolina e il problema dei rapporti tra Sicilia e Malta nella prima eta del bronzo', *Bullettino d'Arte*, s.6, 66 (1981), 106.

14 S. Tiné, 'La Grotta di Chiusazza SR', nos. 16, 223, Fig.15 and pl.XXI.3., *Bullettino di paletnologia italiana* 74, (1965).

15 Lamb, XIV, 1.

16 Trump (1966), 46.

17 J. Evans, *Prehistoric Antiquities of the Maltese Islands*, (London. Athlone Press, 1971), 141.

18 L. Bernabò Brea, *Sicily*, 134 and Fig. 28, (London. Thames and Hudson, 1957).

19 J. Evans, 'The Prehistoric Culture Sequence in the Maltese Archipelago', *Proceedings of the Prehistoric Society* XIX pt.1, (1953), 41-94.

20 Evans (1956).

A view from the countryside: pollen from a field at Mistra Valley, Malta

Chris Hunt & Nicholas C. Vella

Introduction

Although historical sources for the Early Modern development of the Maltese landscape are abundant and well-documented, these records are uncorroborated by other forms of evidence. As part of investigations of the development of a field system at Mistra Valley, Malta, a sample was taken from a waterlain layer at the base of a field-fill on the edge of the valley-floor in Mistra Valley.[1] Pollen and other analyses were done on this layer to identify the environment and agriculture of an early stage in the field system.

The Mistra Valley Field System

The Mistra Valley forms part of the Miżieb basin defined by two Coralline Limestone uplands, the Mellieħa Ridge to the north and the Bajda Ridge to the south. This basin consists of an elongated plain which narrows to the east to give way to a shallow valley – Il-Wied tal-Kalkara – at the head of Mistra Bay. The history of the landscape of Miżieb is well documented, particularly because several land boundary disputes concerning access to common grazing grounds in the Late Medieval period took place here.[2] In the Early Modern period, moreover, substantial efforts were made by the Mdina *Università* and by the Order of St John's *Fondazione Lascaris* to purchase and develop lands in northern Malta.[3]

The lands of Miżieb ir-Riħ consist of two parts. The basin floor together with the southern slopes of the Mellieħa Ridge with two freshwater springs at the foot of a scarped edge was the property of the Mdina Cathedral since 1523.[4] The territory of Miżieb ir-Riħ also included contiguous areas to the south, in particular three caves on the southern slope of the Bajda Ridge where farmers lived and stored fodder and thorns for fuel.[5] By the 1620s, possibly before, most of the territory had been enclosed by a rubble wall as illustrated in an enclosure map dated tentatively to this time (Fig. 2 b).[6] Details of the lease compiled by the Cathedral in 1791[7] and the *cabreo* compiled in 1838 define the *territorio* into several parts of mediocre and bad arable.[8] In the 1838 document the enclosures are listed thus, from east to west: *Ta Hofret migdum*, *Il Baida ta Hofret Migdum*, *il Catgha tal Hain ta Nofs*, *il Catgha tal Ghain Znuber*, *il Ghalcha ta Schiatba*. In 1677 arable land in a nearby area called *ta Sciama* was bought by the Cathedral and added to the Miżieb estate (Fig. 2 c).[9]

Contiguous lands to the south of the valley basin, consisting of the gentle, northern slopes of the Bajda Ridge and the limestone plateau itself, stretching from the Xagħra il-Ħamra in the west to Ix-Xagħra tal-Għansar in the east were granted by Grand Master De Paule to the *Università* after a request had been made by its jurats in 1627.[10] In 1654 the lands were in turn bought from the *Università* by the *Fondazione Lascaris* (set up by the Order of St John in 1646).[11] By 1658 the area which had hitherto been used for rough grazing was surrounded by walls and divided into enclosures.[12] It was surveyed by the *Fondazione* for its *cabreo* compiled in 1784.[13] From west to east the enclosures are: *Territorio in contrada di Hain Toffieha, appellato il Cortino di Hain*

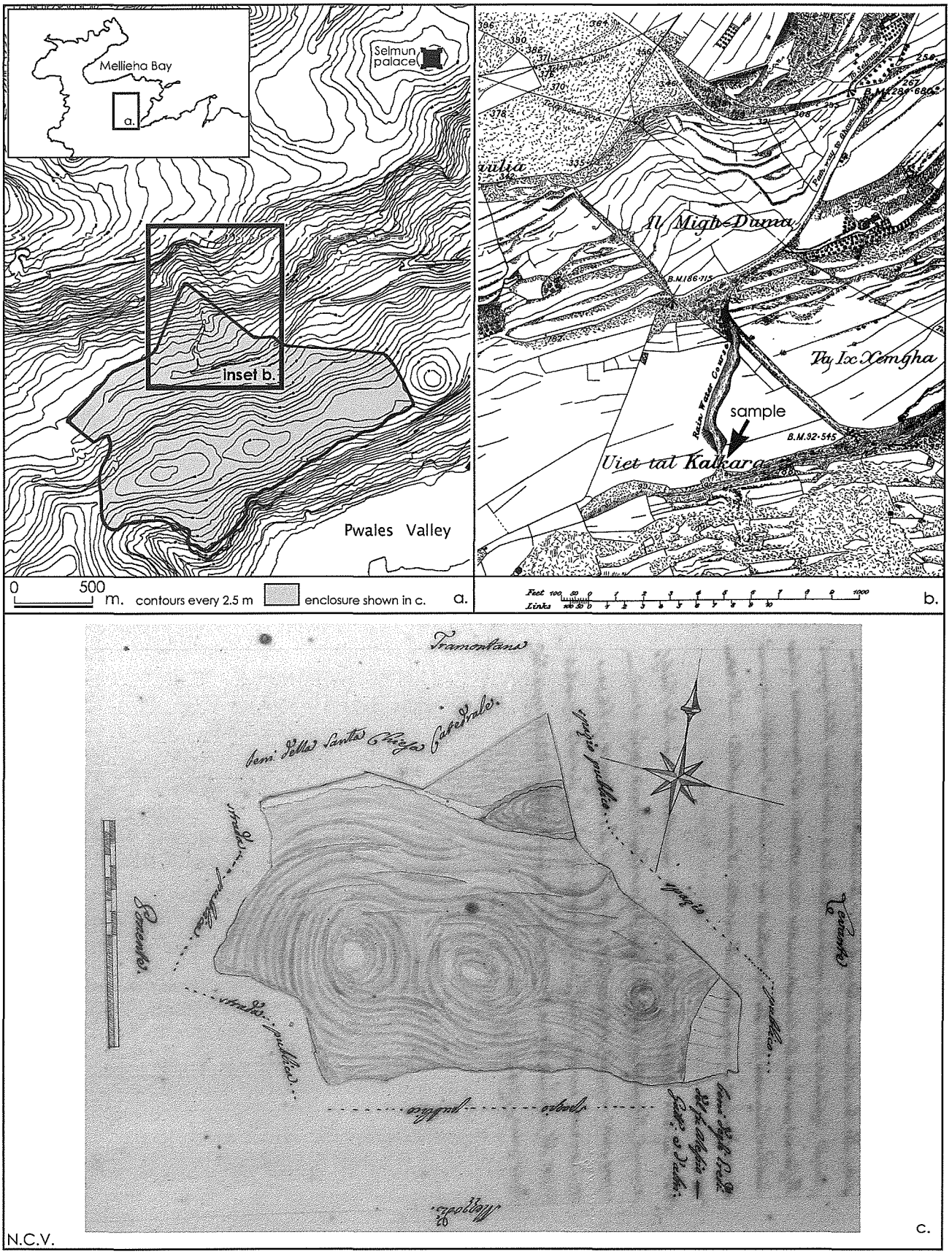


Fig. 1. (a) contour map of area discussed in the text with inset showing extent of the area depicted in (b) and extent of the enclosure shown in (c); (b) part of survey sheet 18 of the Survey of Malta published by the Ordnance Survey in 1903 and corrected in April, 1903; (c) Enclosure known as Clausura di terra posta in contrada tal Pwales, appellate Schiaret al Hansar *from NLM, Treas. B 302, f. 59 (reproduced courtesy of the National Library of Malta).*

Toffieha;[14] *Clausura di terra in contrada Miziep Irrih, appelata Dar il Baida*[15] and an additional area of the same enclosure shown on a different map;[16] *Clausura di terra posta in contrada tal Pwales, appellate Sciharet al Hansar* (Fig. 1 c).[17]

It is possible to discern the extent of all the enclosures and territorial holdings in this area in the six inch to the mile map issued by the Ordnance survey in the late nineteenth century, last updated in 1940 (Fig. 2 c). Fig. 2 d is a plot of these enclosures, lines which demarcate land whose physical expression in the landscape is invariably the rubble wall. The curved walls which follow the contours on the sides of the ridges visible on some of the enclosure maps (e.g. Fig. 1 c) have not been included on Fig. 2 d but are evidence of a field pattern dictated largely by topography. Superimposed on these is a rectilinear arrangement of tracks and walls on the Bajda Ridge plateau, down its northern slopes and coming up against the walls that demarcate the Cathedral lands in the valley floor. These rectilinear enclosures date to the second half of the nineteenth century and are evidence for the attempt of the British Colonial government, instigated by the local *Società Economico Agraria*, to develop the region by granting rectilinear parcels of land in emphyteusis to farmers.[18] The intensive form of landuse on the Bajda Ridge, on the other hand, is a recent attempt at afforestation, the latest palimpsest in this historic landscape.[19] The sketch in figure 4b provides chronological tags to some landscape features mentioned here.

Stratigraphy

At GR 435788, in the sides of a drainage channel in a field above the Wied tal-Kalkara (Fig. 1 a; position marked on Fig. 1 b), the stratigraphy shown in Table 1 is exposed. Layer 3 is a typical Maltese field deposit and layer 1 probably has the same origin. The colour and texture of layer 2 suggests a waterlain origin.

Table 1:
Stratigraphy of the field deposits at Mistra Valley

Layer no.	Thickness (m)	Description
3	0.8-1.0	Strong-brown to reddish-brown very stony clay field soil with shells of *Pomatias sulcatus*
2	0.1-0.2	Mid grey-brown, silty clay with very occasional small stones and shells of *Helix aspersa*
1	0.2 (base unseen)	Strong-brown very stony clay

Methods

A sample from Layer 2 was subjected to the palynological preparation methods described in Hunt (1985)[20] - boiling in 5% potassium hydroxide solution to disaggregate, sieving on 6 micron nylon mesh to remove solutes and fines, swirling on a clock-glass to remove silt. The resulting organic concentrate was stained with safranine and mounted in glycerol for microscopic examination. All pollen and spores in the sample were counted and percentages calculated. In addition, a count of the palynofacies – the whole variety of particulate organic matter in the sample – was made using the conventions of Hunt & Coles (1988).[21] The results are shown in tables 2 and 3. A subsample was also analysed by X-Ray Fluorescence at Huddersfield University, by Mrs M. Scott. The XRF analysis is shown in tables 4 and 5.

Palynology

The sample (Table 2) contained abundant, well-preserved organic matter, but less than 1% of this is pollen. The palynofacies assemblage is characterised by abundant plant cell walls and cuticle, mostly degraded, but mostly showing characteristic Poaceae morphology. Most of the thermally mature (charred) material is also derived from Poaceae. This is likely to reflect cereal cultivation and stubble burning in adjoining fields. Amorphous organic matter (AOM) is present in quantity, as is typical of well-manured soils and other localities with a strong flux of organic matter and high microbial activity. Other major components of the palynofacies assemblage are fungal in origin – fungal hyphae, fungal spores, vesicular arbuscular miccorhyzae (VAM). These reflect

the soil microflora and are likely to be present in this waterlain layer as the result of soil erosion.

Table 2:
Palynofacies analysis of layer 2 from the Mistra Valley

Palynofacies type	No.	%
Pollen	1	0.8
Plant cell walls & cuticle	3	2.5
Degraded plant cell walls & cuticle	24	19.7
Root caps	2	1.6
Amorphous organic matter	33	27.0
Thermally mature	12	9.8
Fungal hyphae	35	28.7
Fungal spores	5	4.1
Vesicular arbuscular miccorhyzae	3	2.5
Arthropod cuticle	1	0.8
Amoeboid cysts	1	0.8
Resinite	1	0.8
Inertinite	1	0.8
Total	122	100.0

The pollen assemblage (Table 3) is characterised by abundant *Pinus* (pine), with some Lactucae (dandelion group) and Cereal. Apart from *Pinus*, trees are very rare, represented only by *Olea* (olive), *Eucalyptus* and *Acacia*. The last two are introduced species, probably not before the 19th century AD.[22] Cultivated crop plants include undifferentiated Cereal pollen (most likely barley and/or wheat), *Zea* (Maize), *Gossypium* (Cotton) and possibly Brassicaceae (Cabbage family including Cabbage, Cauliflower, Broccoli, Turnip, Swede and Oil-Seed Rape, although this could also be pollen of a wild species). Cotton is self-fertile and the pollen grains are normally retained within the cotton boll, so would only reach the environment in unusual circumstances, such as the trampling of a boll into the ground during harvesting. The find of one pollen grain is therefore highly suggestive of cotton cultivation, known to have taken place in the fields at Miżieb ir-Riħ (at *Il Baida ta Hofret Migdum* – Fig. 2 d) at least until 1791.[23] Two other components are present in the sample. Most other pollen would be derived from the Maltese native vegetation mosaic of maquis (*Cistus, Rhus*), garrigue (Ericaceae, *Euphorbia*) , and steppe (Poaceae, Chenopodiaceae, *Artemisia*, *Plantago, Rumex, Silene*-type, *Bidens* type, *Aster* type, Lactucae, *Serratula* type, *Bellis* type, *Convolvulus, Glaucium* type, Caryophyllaceae, Brassicaceae, *Euphorbia, Centaurea nigra* type, *Agrimonia, Alchemilla* type, Liliaceae), although some would have invaded the fields and be regarded as agricultural weeds, notably Lactucae, Poaceae, Chenopodiaceae, Caryophyllaceae, *Rumex, Serratula, Convolvulus, Glaucium* and *Centaurea*. *Montia* and the algal microfossils *Spirogyra, Saeptodinium* and the Chrysostomataceae would have been derived from shallow, sun-warmed standing water and most probably reflect the local depositional environment of the grey clay layer in a pool within the field system. *Borago officinalis* and *Ranunculus* are often typical of waterside habitats. The presence of the non-native species *Zea, Acacia* and *Eucalyptus* suggests a relatively recent date for the layer, either late in the 19th century or early in the 20th century.

Table 3:
Pollen analysis of layer 2 from the Mistra Valley

Taxon	No.	%
Pinus	87	55.1
Olea	3	1.9
Acacia	3	1.9
Eucalyptus	1	0.6
Cistus	5	3.2
Rhus	1	0.6
Ericaceae	2	1.3
Ephedra	2	1.3
Rosaceae	1	0.6
Cerealia	10	6.3
Zea	1	0.6
Gossypium	1	0.6
Poaceae	4	2.5
Chenopodiaceae	4	2.5
Artemisia	4	2.5
Plantago	3	1.9
Rumex	3	1.9
Silene type	2	1.3
Viola tricolor type	2	1.3
Bidens type	7	4.4
Aster type	2	1.3
Lactucae	34	21.5
Serratula type	4	2.5
Bellis type	1	0.6
Borago officinalis	1	0.6
Ranunculus	1	0.6
Convolvulus	1	0.6
Glaucium type	2	1.3
Caryophyllaceae	3	1.9
Brassicaceae	4	2.5
Euphorbia	1	0.6
Centaurea nigra type	1	0.6
Agrimonia	1	0.6
Alchemilla type	1	0.6
Liliaceae	2	1.3
Montia fontana	2	1.3
Pteropsida	1	0.6

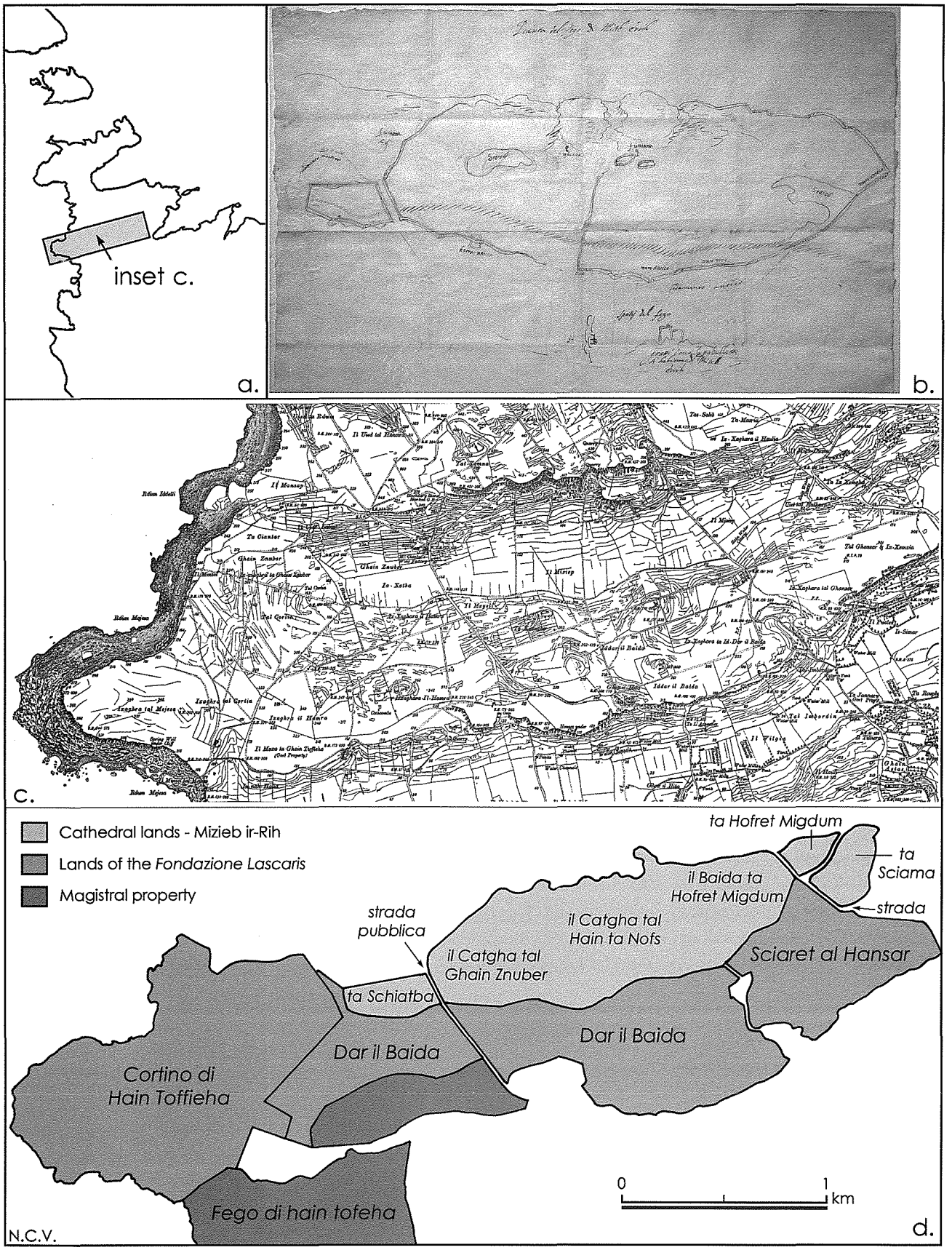


Fig. 2. (a) location map showing extent of territory included in (c); (b) enclosure map – Pianta del fego di Mizeb Errich *from ACM, Beni della Cattedrale, vol. 4, f. 6 (reproduced courtesy of the Mdina Cathedral Chapter); (c) part of sheet 3 in the six inch to the mile series produced by the Ordnance Survey in 1940; (d) enclosure map of various land holdings produced relative to the scale of map in (c).*

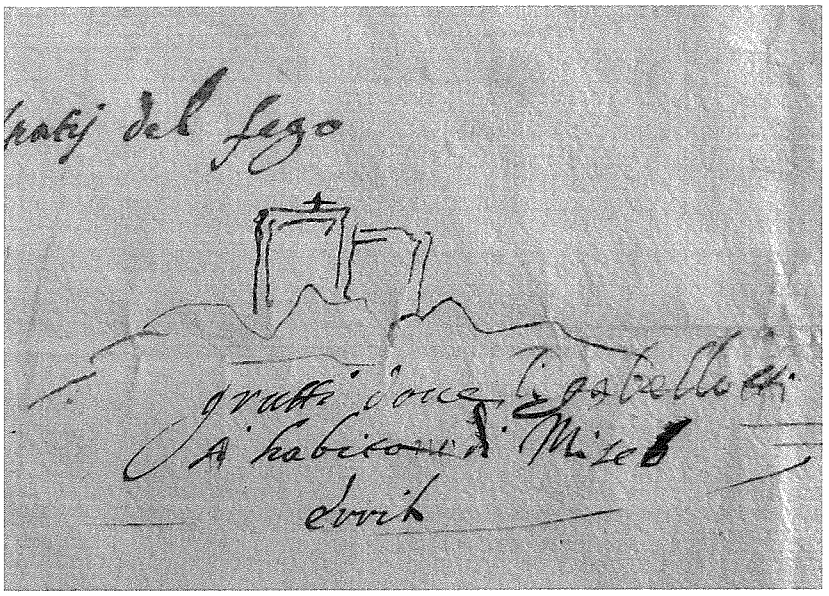


Fig. 3. Detail of the Pianta del fego di Mizeb Errich *shown in Fig. 2, a.*

Indeterminate	4	2.5
Total	212	100.0
Spirogyra	2	1.3
Chrysostomataceae	1	0.6
Saeptodinium sp.	1	0.6

Geochemistry

Geochemical analyses were made of layer 2 from the wall-fill, plus samples of the Blue Clay and Upper Coralline Limestone bedrocks which outcrop upslope from the sample site and a sample of calcreted (cemented with calcium carbonate through pedogenic processes) Quaternary slope deposits which also outcrops at Mistra. The samples were analysed using X-Ray Fluorescence on powdered sample in a Spectro X-Lab. Results for selected elements are shown in tables 4 and 5 as parts per million. In table 4, the major elements of the sample are shown. This shows that layer 2 is derived from a mixture of Blue Clay and Coralline Limestone.

In Table 5, selected heavy metals are shown. The sample from layer 2 is enhanced in copper (Cu), zinc (Zn) and lead (Pb) relative to the values in the bedrock samples. This is likely to be at least partially the result of atmospheric fallout during the accumulation of layer 2, and confirms a late 19th or early 20th century age for the layer, since heavy metal fallout was enhanced in the Maltese Islands during the last 150 years as a result of industrial development.[24]

Conclusion

The waterlain deposit within the field fill thus provides useful information about Maltese agriculture during the early years of the field system. There are lines of evidence both from the pollen, with the presence of the introduced species, and from the heavy metal content, that the deposit dates to the later part of the nineteenth or the early years of the twentieth century AD. The decline of cotton production in the course of the 19th century[25] suggests that the layer is not younger than this.[26] The natural environment locally was probably very little different from the modern. There is evidence for cultivation of a number of crops, including Olive, Barley or Wheat, Maize, Cotton, and perhaps a Brassica.

Cartographic and other documentary evidence also confirms this picture. By 1903 when survey sheet 18 was published by the Ordnance Survey at a scale of 1:2500, the field where the pollen sample was taken is clearly in place, with the soil kept back by a rubble retaining wall skirting the Wied tal-Kalkara (Fig. 1 b). This field was given on a 99-year

Table 4: Major elements in samples from Mistra Valley (ppm)

Sample	Mg	Al	Si	P	S	K	Ca
Blue Clay	5130	53520	139200	569	435.1	16880	78600
Upper Coralline Limestone	450	3805	10280	62	613.6	890	374300
Calcrete		2695	4354	63	392.7		398300
Field Fill layer 2	870	18020	50180	343	802.9	5994	262600

Table 5: Heavy metals in samples from the Mistra Valley (ppm)

Sample	Cr	Co	Ni	Cu	Zn	Cd	Hg	Pb
Blue Clay	157.9	49.9	36.2	20.6	88.4	5.2	4.9	24.9
Upper Coralline Limestone	93.5	47.3	9.1	7.3	16.8	7.8	9	10.8
Calcrete	84.1	30.7	8	4	12.1	9.2	7.3	6.6
Field Fill layer 2	142.7	48.5	21.4	35.5	121.6	6	5.1	198.6

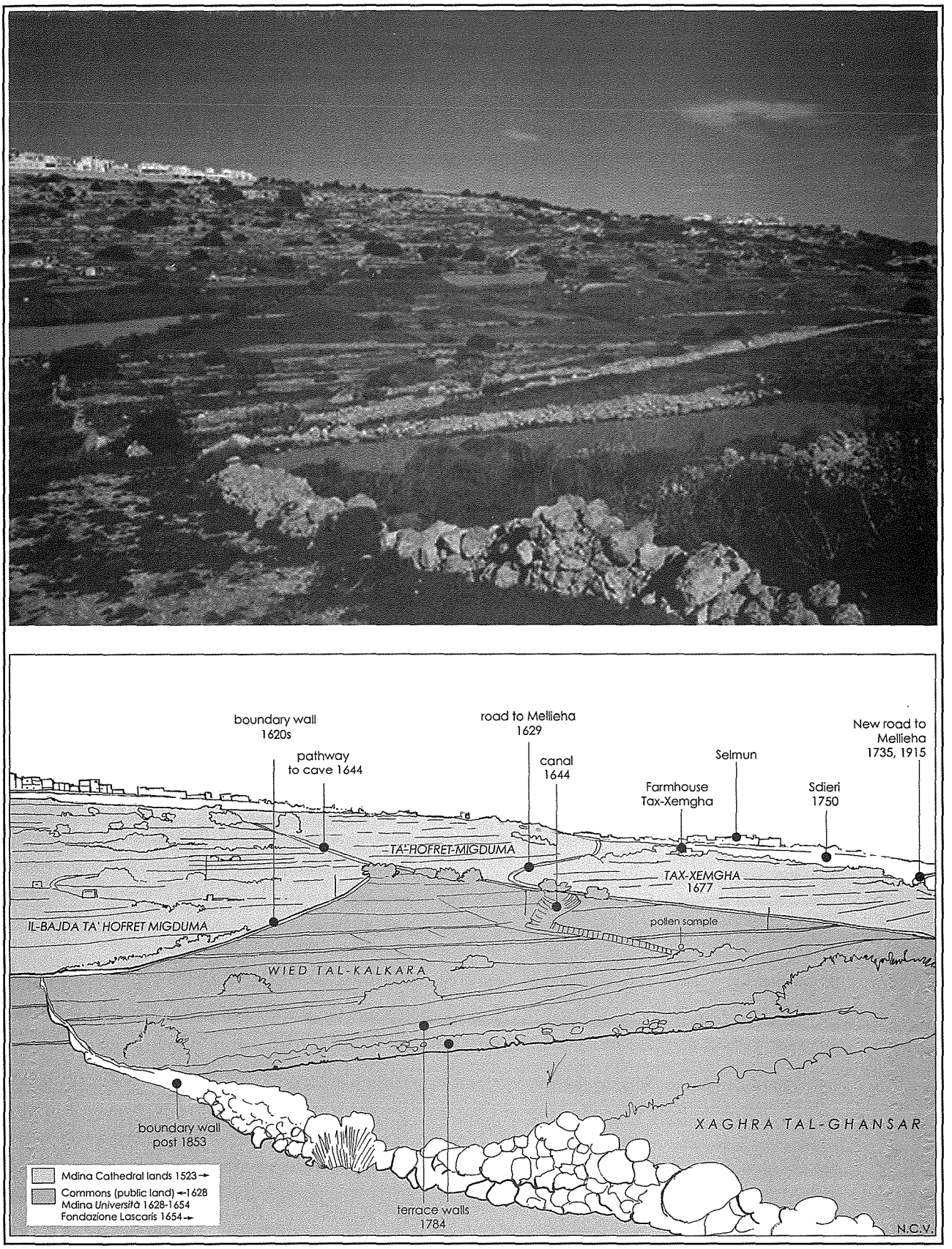


Fig. 4. Sketch (bottom) of landscape features shown in the photograph (top) for which it was possible to provide a chronological tag on the basis of documentary and cartographic evidence.
Point of observation GR4343, 7855

lease to farmers from Naxxar in 1862. The contract dated 17 March 1863 stipulated that the farmers had four years to break the surface of the rock wherever possible, and cover with soil to a sufficient depth the area in order to turn it into arable land.[27] In 1644, this same area then belonging to the *Università*, where runoff water had formed a canal (extant to this day), was to be left 'free and uncultivated' by those being asked to rebuild collapsed rubble boundary walls marking the adjoining Cathedral lands.[28] In 1784, when the *Fondazione Lascaris* had this same area surveyed, the field does not seem to have existed (Fig. 1 c).[29] The area to the east of the rainwater canal was rendered in watercolour and ink in a way that is reserved for rocky surfaces rather than arable.[30]

Although this study is limited chronologically, it suggests that similar studies elsewhere in the Maltese Islands may prove worthwhile and may throw new light on the evolution of an ancient landscape.

Acknowledgements
Part of the research presented here was conducted whilst one of us (NCV) was on sabbatical leave from the University of Malta in the spring of 2006. Documentary research was much facilitated by the kindness of the archivists and officers in charge, in particular Maroma Camilleri (National Library), Nicholas Aquilina and Joe Mifsud (Chief Draughtsman's Office), Mario Gauci (Mdina Cathedral Archives), and Raymond Bonnici (Archiepiscopal Archives). Fruitful discussions have been had with Dr Anton Bugeja and Mevrick Spiteri who have been instrumental in pointing out source material related to land tenure in areas contiguous to the ones discussed here. Finally, we are grateful to Charles Dalli and Prof. Stanley Fiorini, both of the University of Malta, who helped us understand the content of various documents used here.

Abbreviations
AAM = Archiepiscopal Archives, Malta
ACM = Archives of the Cathedral of Mdina, Malta
CD = Chief Draughtsman's Office, Malta
NAM = National Archives, Malta
NAV = Notarial Archives, Valletta, Malta
NLM = National Library, Malta

Manuscript sources
Library manuscripts
Lib. 1302 = Raccolte delle rendite di Malta, Gozze, e Roma di netto compensare le spese per le concie necessarie, che tiene la fondazione Lascaris annosate nel Cabreo ultimamente fatto in conformità delle decretei di sua Em.a. 1658.
Treas. B 301 = Cabreo de' Beni Urbani e Rustici posti nell'Isola di Malta, spettanti alla Fondazione dell'Emo Signor Gran Mro della S.R.G. Frà Gio-Paolo Lascaris Castellar. 1784.
Treas. B 302 = Cabreo de' Beni Urbani e Rustici posti nell'Isola di Malta, spettanti alla Fondazione dell'Emo Signor Gran Mro della S.R.G. Frà Gio-Paolo Lascaris Castellar. 1784.

Cathedral Archives
Beni della Cattedrale, vol. 1, 1528-1609
Beni della Cattedrale, vol. 3, 1786-1801
Beni della Cattedrale, vol. 4, 1523-1682
Beni della Cattedrale, 1590-1833

Archiepiscopal Archives
Cabreo 1838 = Descrizione Generale di tutt'i Beni Stabili esistenti nella isola di Malta e Gozo spettanti alla S. Chiesa Cattedrale Archivescovile di Malta, colle lore denominazioni, piante, capacità, contrade, confini, concessioni ed annuo canone; e di alcuni Ricognizioni, terminata correndo l'anno 1838.

Notes
1. This investigation was carried out to provide data in connection with the Xemxija Archaeological Survey carried out by the Department of Classics and Archaeology of the University of Malta in 2001-2002 as part of undergraduate training in surveying and fieldwalking techniques. The report of the excavation of a Punic tomb carried out during the survey was published in N. C. Vella, A. Borg, B. Borg, N. J. Cardona, K. Chetcuti-Bonavita, A. Corrado, E. DeGaetano, K. Fenech, C. Sagona, J. Samut-Tagliaferro, I. Vella Gregory, 'Report on the excavation of a Punic tomb, Bajda Ridge, Xemxija (Malta)', *Malta Archaeological Review*, vol. 5, (2001), 16-22, whereas the results of the field survey are being prepared for publication by one of us (NCV). The survey departs from the resolve that archaeologists stand to benefit from a study of landscape that affords attention to the present and recent past as much as it does to more remote and ancient pasts. In this way, the supposed great antiquity of certain landscape features and production methods can be questioned against the mutability of rural Maltese economic and settlement strategies. For Malta, see comments in N. C. Vella, 'Phoenician and Punic Malta, *Journal of Roman Archaeology*, vol. 18, (2005), 445, and, more generally, S. B. Sutton, 'Introduction: Past and Present in Rural Greece', in S. B. Sutton, (ed.), *Contingent Countryside: Settlement, Economy, and Land Use in the Southern Argolid since 1700*, (Stanford, California. Stanford University Press, 2000), 1-24.
2. G. Wettinger, 'Agriculture in Malta in the Late Middle Ages', *Proceedings of History Week*, (1981), 31-34; and id., 'L-inħawi tal-Mellieħa fiż-Żmien Nofsani', in J. Catania, (ed.), *Il-Mellieħa mal-milja taż-żmien*, (Mellieħa. Kunsill Lokali Mellieħa, 2002), 40-47.
3. B. Blouet, *The Changing Landscape of Malta During the Rule of the Order of St. John of Jerusalem, 1530-1798*, (Unpublished PhD thesis, University of Hull, UK, 1963); see also S. Fiorini, 'The municipal councils in the Maltese Islands: 1530-1800', in J. Manduca, (ed.), *The Making and Unmaking of the Maltese Universitas, A Supplement to Heritage*, (Malta. Klabb Kotba Maltin, 1993), 16, 20.
4. ACM, Beni della Cattedrale, vol. 1, 1528-1609, f. 1; Beni della Cattedrale, 1590-1833, f. 62r.
5. Beni della Cattedrale, 1590-1833, f. 62r.
6. ACM, Beni della Cattedrale, vol. 4, 1523-1682, f. 6. According to Wettinger the map is 'probably early 16th century', (G. Wettinger, *Place-Names of the Maltese Islands ca. 1300-1800*, [Malta. Publishers Enterprises Group Ltd, 2000]), 394. In another contribution, Wettinger (2002), in a sheet of errata-corrige placed as an insert to the publication, provides a caption to

the map, giving the date as 'probably 1569'. The large folded map originally formed part of the Beni della Cattedrale vol. 4, 1523-1682, where it was bound with the 1569 act of the sale of the land at Miżieb ir-Riħ (folios 5 and 7). A few years ago the map (folio 6), was removed for restoration and placed in the Drawings Archives, file no. 67, inv. no. 819. A photocopy of the original is now found in its place. It is more likely, however, that the map dates to the late 1620s when a dispute concerning some caves may have resulted in its production by Church surveyors. In 1627 a request was made to the Grand Master De Paule by the jurats of the Mdina *Università* to enclose 'terreni spatij publici' in this area with 'muri di pietra secca', including caves overlooking the Pwales valley, in particular 'Ghar Schalli' (NLM, Lib. 670, f. 58). The grant came on 21 January 1628 according to G.F.Abela, *Della Descrittione di Malta,* (Malta.1647), 74-75; also NLM, Lib. 670, f. 60. In the same year, the Mdina Cathedral considered these same caves part of its lands at Miżieb ir-Riħ (ACM, Beni della Cattedrale 1590-1833, f. 62v.), as specified on the map itself where the caves are shown in an area denoted 'spatij del fego' and defined as 'grotte dove li gabellotti habitono di Miseb errih' (Figs. 2 b and 3).

7. ACM, Beni della Cattedrale, vol. 3, 1786-1801, ff. 164-234.
8. AAM, Cabreo 1838.
9. ACM, Beni della Cattedrale, 1590-1833, f. 62v.
10 NLM, Lib. 670, ff. 57-59.
11 NLM, Lib. 1302, ff. 21v.-22v.; NAV, S. Attard R.31, ff. 827-832v.: 23 May 1654; Blouet, 106.
12 Blouet, 107.
13 NLM, Treas. B 301.
14 Ibid., f. 71.
15 Ibid., f. 75.
16 Ibid., f. 77.
17 NLM, Treas. B 302, f. 59.
18 H. Bowen-Jones, J. C. Dewdney, and W. B. Fisher, *Malta: Background for Development*, (Durham. Department of Geography, Durham Colleges, 1961), 303. Reference to the debate on the land to be reclaimed for agricultural purposes can be found in the *Gazzetta Agraria Maltese* anno 1, no. 7 (18 ottobre 1855), 152-153. The lands visited by the commission set up to identify areas for reclamation are listed in the *Gazzetta Agraria Maltese* anno 2, no. 10 (1 marzo 1856), 262. The report of the Commission was written by V. Azopardi, *Rapporto della Commissione sulla utilità di concedere in enfituesi le terre incolte del Gruppo di Malta*, (Malta. Società Economico Agraria, 1848). The lands known as Ix-Xagħra tal-Għansar are included in tenement 197, consisting of 445 tumoli of Crown property lands of good and bad quality in Pwales and Simar given out as allotments on 2 August 1854 (NAM, PW 175, 1854, no. 74). They are seen on survey sheet 18 of the roll containing the *Government Property Survey Sheets 1-70* at the Chief Draughtsman's Office, Ministry for Resources and Rural Affairs, Floriana.
19 H. G. Keith, *Report of the Government of Malta on the Afforestation of Waste Lands and the Development of Tree Planting on Agriculture Lands in the Maltese Islands*. (Malta. Central Office of Information, 1956), 9; extent shown on CD roll 50M/drawing 2088.
20 C. O. Hunt, 'Recent advances in pollen extraction techniques: a brief review', in N. R. J. Fieller, D. D. Gilbertson & N. G. A. Ralph (eds.), *Palaeobiological investigations: research design, methods and data analysis*, BAR International Series 266, (Oxford. Archaeopress, 1985), 181-188.
21 C. O. Hunt and G. M. Coles, 'The application of palynofacies analysis to geoarchaeology', in E. A. Slater and J. O. Tate, (eds.) *Science and Archaeology,* BAR British Series 196, (Oxford. Archaeopress, 1988), 473-484.
22 The introduction of new species to Malta is not easy to determine. It is known that specimens of *Eucalyptus* were collected in Australia and taken to Europe at the end of the eighteenth century, (R. W. Doughty, *The Eucalyptus: A Natural and Commercial History of the Gum Tree*, (Maryland. Johns Hopkins University Press, 2000). References to *Eucalyptus* in nineteenth-century thesauri of Maltese flora (e.g. S. Zerafa, *Flora Melitensis Thesaurus*, [Malta. 1831], and C. Grech Delicata, *Flora Melitensis*, [Malta. 1853]), do not occur but *Eucalyptus Globulus* is listed in the *Rendiconto della Esposizione Agraria* for 1875 (p. 55). On the other hand, *Acacia farnesiana* and *Zea* are listed by Zerafa, (pp. 41, 78) ; *Zea* is also mentioned by Giacinto, *Saggio di agricoltura per le isole di Malta e Gozo*, (Messina. Giovanni del Nobole, 1811), 115.
23 ACM, Beni della Cattedrale, vol. 3, 1786-1801, f. 195v.
24 F. Carroll, *The potential use of harbour sediment in the construction of past environmental history*, (Unpublished BSc dissertation, University of Huddersfield, UK, 2001).
25 Giacinto (1811), 219; see also G. P. Badger, *Description of Malta and Gozo*, (Malta. M. Weiss, 1838), 53.
26 By the time that Giacinto made a reasoned plea to support cotton cultivation in Malta, cotton from Egypt and America was flooding the local market (C. Giacinto, *Mezzo stabile di prosperità per le isole di Malta e Gozo,* [Malta, 1825]). In 1855, cotton samples from Dingli and Qrendi were deemed of too low a quality to compete with foreign imports and to merit a prize in the agricultural fair held that year (*Gazzetta Agraria Maltese*, [1855], 186). Experimentation in cotton cultivation in Malta, however, persisted for several decades (*Atti della Società Economica Agraria* [1907], 11). Seventeenth century cotton cultivation in Malta is discussed at length in J. Debono, 'The Chamber of Commerce and the cotton trade of Malta in the eighteenth century', *Melita Historica,* vol. 10, (1988), 27-50; on Egyptian cotton, see R. Owen, 'A long look at nearly two centuries of Long Staple cotton', in A. K. Bowman and E. Rogan, (eds.) *Agriculture in Egypt from Pharaonic to Modern times*, Proceedings of the British Academy 96, (Oxford. The British Academy, 1999), 347-365.
27 NAM, LG 2613/38; CD, roll 50H/drawing 650.
28 ACM, Beni della Cattedrale, vol. 4, 1523-1682, f. 274v.
29 NLM, Treas. B 301, f. 59.
30 A close study of the maps of fields included in the *cabreo* of the *Fondazione Lascaris*, NLM, Treas. B 301, shows that besides the use of colour banding to indicate field boundary ownership, the compiler used different colours and rendering to convey information about land quality. Arable land of very good or good quality (*buonissima, buona qualità*) was rendered in pink hatching sometimes interspersed with grey ones (e.g. f. 49); arable land of mediocre quality (*mediocre qualità*) was rendered in grey and pink shades (f. 61); bad quality land (*malissima qualità*) was represented in shades of grey and black clearly meant to represent a rock surface or outcrop (f. 73).

LIST OF CONTRIBUTORS

George Azzopardi was born in Gozo in 1966. He studied archaeology at the University of Malta where he graduated B.A. (Hons) and M.A. with a Classical orientation in 1994 and 1999 respectively. His latest research focused on the administrative and political set-up of the Maltese islands in Roman times. He has participated in the archaeological excavations at Xagħra (Brochtorff) Circle prehistoric site and also in a number of other smaller archaeological interventions. He works at the Gozo Museums where he has been since 1996.

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David H. Trump is very closely associated with the development of Maltese archaeology. In 1954, when, as an assistant to John D. Evans, he was involved in the excavations of Ġgantija Temples in Gozo. After taking his B.A. in 1955 and Ph.D. three years later, he served as Curator of the local National Museum between 1958-1963, when he promoted a programme of archaeological excavations, including the first excavations at Skorba. Dr Trump was the first archaeologist to introduce the science of 'carbon dating' in Malta and also discovered two new phases in Maltese prehistory, which are now referred to as the Skorba phases. Dr Trump has published extensively. These include publications dedicated exclusively to Maltese archaeology, such as *Skorba – the Prehistory of Malta* (1966), and *Malta: Its Prehistory and Temples* (2003).

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John Wood was educated at Saint George's preparatory school and Training Ship Mercury. (T.S. Mercury was commissioned H.M.S. Gannet in 1879, based Malta 1885-95, now the only surviving Victorian sloop, Chatham Historic Dockyard.) Joined the Royal Navy 1954. Qualified Shallow Water and Ship Diver. Discovered Xlendi shipwrecks in 1961 whilst working with the Malta Department of Antiquities. Teacher of Art and Design 1967-95. Assisted in experimental work on the Maltese thermocline for the UK Meteorological Office 1969-71. Participated in the excavation and conservation of the Punic Ship, Marsala 1974-79. Member of the Society for Nautical Research. Author of a number of publications about Pipi tal-Qasba, Maltese folklore and Maltese migration to Tunisia.

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