

MALTA, AN ISLAND SATELLITE IN THE LEE OF SICILY:
INVESTIGATING THE TROGLODYTIC CONTEXT
FOR THE LATE-MEDIEVAL AND THE EARLY-MODERN PERIODS

Abstract

For centuries during the Late-Medieval period¹, the Maltese archipelago was intimately drawn into the Sicilian sphere of influence. The archipelago's compact size and geographical proximity to its much larger neighbour directly contributed in placing Malta within the Sicilian orbit². The roots of Maltese Late-Medieval troglodytism probably lie in the 12th and 13th centuries, and are the result of new attitudes adopted following the Norman conquest of 1127 AD³. A strong troglodytic tradition during this period might possibly reflect coordinated attempts at increasing the agricultural output of specifically designated countryside areas of Malta. Considering the geographic vicinity of Malta to the south-eastern Sicilian region, it is probable that most influences filtered into Malta through direct contact with this part of Sicily. It is the objective of this essay to examine several cave sites used for the purpose of human habitation and religious worship during the late-medieval and the early-modern periods, the various types of cave typologies and the hydrological infrastructure which enabled such rock-excavated settlements to exist. The water supply of most troglodytic settlements in Malta is obtained through a series of subterranean galleries tapping ground water sources. This mode of water extraction is similar to that retrieved from Qanat systems and possibly filtered into Malta from neighbouring Sicily during the course of the later Medieval period.

Introduction

The Maltese archipelago lies in the central Mediterranean Sea south of Sicily. Its largest islands (listed in descending order according to size), are Malta, Gozo and Comino. Central to this paper's discussion is the island of Malta, which occupies a total land surface area of 153 km² and has a maximum length and width of 27.4 km and 14.5 km respectively (Pl. 1). Geological depositions are almost exclusively sedimentary in formation, and started to form in a marine environment between 30 and 6 million years before present⁴.

The archipelago owes its origin to prolonged stress between the European and African continents, where plate tectonic activity completely reshaped the central Mediterranean basin into a series of horst and graben formations. Tectonic activity also uplifted several portions of the Sicilian-Tunisian Platform on which Malta lies, a few hundred metres above sea level⁵.

¹The Late-Medieval period in Malta spans from the 11th to the first half of the 16th Century.

²DALLI 2008, p. 245.

³BUHAGIAR M. 2005, p. 40.

⁴ZAMMIT-MAEMPEL 1977, p. 18; PEDLEY-CLARKE-GALEA 2002, p. 8.

⁵*Ibidem*, pp.18-29.

Geology and Climate

Four distinct rock layers constitute the basic geology (Pl. 2), and when undisturbed by land faulting, the horizontal stratification from bottom to top reads as follows: (1) Lower Coralline Limestone; (2) Globigerina Limestone; (3) Blue Clay; and (4) Upper Coralline Limestone⁶. Exposed Lower Coralline and Globigerina Limestone deposits mainly cover areas of central and southern Malta. Upper Coralline Limestone deposits are mainly located in the north-west and north part of Malta. With the exception of Blue Clay, which is impermeable, the other rock strata have a varying degree of permeability.

Of direct relevance to this study are the Upper Coralline Limestone and the Blue Clay layers. Upper Coralline is the youngest rock formation, and is carboniferous in nature. Four subdivisions of this rock stratum have been identified. Of particular importance to the understanding of the local cave-dwelling phenomenon is the Mtarfa Member, in which the majority of the caves are located. The thickness of this stratum varies from 12 to 16 m and is composed of massive to thickly bedded carbonate mudstones and wackstones.

From a technical perspective, Blue Clay is the most important rock horizon and it is due to its presence that an easily accessible water table, locally referred to as the *perched aquifer* exists. The perched aquifer occupies an area of ca. 51.01 km² within the Upper Coralline regions of Malta⁷. Water stored above Blue Clay has since antiquity been recognized as a vital and easily accessible resource. Bahrija valley, San Martin valley and other areas of the Mgarr (Malta) region possess Upper Coralline Limestone and Blue Clay deposits and yield a natural perennial water source. On-going research work strongly hints that during the course of the Late Medieval and the Early Modern periods, these natural water sources were augmented by the excavation of subterranean galleries retrieving water from the perched aquifer⁸.

Malta's climate is typically Mediterranean and is characterised by hot dry summers and warm wet winters⁹. Air temperature conditions are stable and predictable, the warmest months being July and August, when temperatures occasionally soar up to around forty degrees Celsius. The annual temperature range is of approximately 15°C and an average precipitation of 568 mm makes rainfall insufficient and erratic and creates regular drought conditions¹⁰. Annual rainfall deviations can vary by as much as 300 mm more or 250 mm less rain¹¹. Since the Early Modern period, water availability has been further aggravated by a large-scale population increase and rising living standards.

The occurrence of climate shifts in the Mediterranean region since antiquity is a subject of controversy and debate. Basing oneself on geological and historical evidence, however, it appears that Mediterranean climatic conditions in Roman times were not appreciably different from those of the present day and were subjected to temporary and minor wetter and colder interludes¹². In another study, the Mediterranean climate reconstruction in the interim AD 1500-1995 period was attempted. No drastic winter temperature and rainfall changes were detected, even though fluctuations were registered¹³.

⁶ *Ibidem*, p. 35.

⁷ MORRIS 1952, p. 55.

⁸ BUHAGIAR 2007, pp. 107-29.

⁹ BOWEN-JONES-DEWDNEY-FISHER 1961, pp. 48-49.

¹⁰ SKINNER-REDFERN-FARMER 1997, p. 188.

¹¹ SAPIANO-MANGION 2006, pp. 21-22.

¹² VITA-FINZI 1969, pp. 112-114.

¹³ LUTERBACHER-XOPLAKI 2002, pp. 133-153.

Recent sediment analysis and radio-carbon dating from Marsa hint towards an increase in sediment erosion, possibly motivated by more rainfall at around 1000 years before present. This was followed by a warmer period, which in north Tunisia resulted in rising temperatures and an increase in humidity at around 900 to 700 years before present¹⁴. Maltese annual rainfall statistics gathered between 1851 and 1950 did not register any rainfall decrease during the course of a Century. It was however noticed that a shift from the second half of the rainy season (January to March) to the first half (September to December) has taken place. Since the 1950s, Malta is experiencing an extended dry season¹⁵.

The Troglodytic Phenomenon

During the Late-Medieval period, the almost complete absence of woodland vegetation provided the ideal springboard for the diffusion of the cave-dwelling phenomenon between the 11th to the 16th Centuries¹⁶. Jean Quintin is the first known author to mention troglodytism in Malta¹⁷. His 'Insulae Melitae Descriptio', published in 1536, shows his surprise at the great number of cave-dwellers on the island. This probably reflected a long-established medieval life-pattern in the Maltese countryside. Rural and urban examples of Late-Medieval rock-cut churches also occur in Malta¹⁸. In the northern regions of Malta, people continued to inhabit caves until the first few decades of the 20th Century.

Cave usage varied from cultic worship to human habitation, animal pens or storage spaces often connected to agricultural usage, animal-driven mills (*centimoli*) and apiaries (Fig. 1)¹⁹. There are two distinct types of medieval cave-settlement in Malta: the adaptation of a natural karst depression for settlement purposes; and cliff-face settlement.



Fig. 1 Typical rock-excavated apiary fronted by a masonry built enclosure at Mellieha, Malta.

Examples of karst feature settlements are Ghar il-Kbir and Latmija (Fig. 2). These involve the occupation of one or more caves hewn into the sides of an open-air, natural rock-hollow²⁰. The hard Upper Coralline Limestone formations within which karst feature settlements occur, frequently restricted cave enlargement.

Cliff-face settlements are located within the sides of ridges and valleys and involve the occupation of a series of natural or artificially enlarged caves. Most of the Maltese troglodytic

¹⁴ FENECH 2007, p. 112.

¹⁵ HYDE 1955, p. 93.

¹⁶ MESSINA 1989, p. 109.

¹⁷ VELLA 1980, p. 31-39.

¹⁸ Dunina recorded the presence of several cave-churches in his visitation report of 1575. See AQUILINA, FIORINI 2001. See also BUHAGIAR M. 2007, pp. 96-103.

¹⁹ CAMILLERI 2003.

²⁰ BUHAGIAR 2003, pp. 64-70.



Fig. 2 General view of the Ghar il-Kbir karst-feature settlement in the territory of Siggiewi, Malta.

settlements fall under this category and are often excavated into a surprisingly brittle Upper Coralline Limestone substratum technically known as the Mtarfa Member. This formation is probably much easier to quarry than Globigerina Limestone and does not make the process of cave excavation and enlargement as labour intensive and time consuming as commonly assumed (Fig. 3). The location of most cave-settlements suggests that their occupants possessed a sound knowledge of the local geology. Mtarfa Member deposits are commonly located directly above the perched aquifer, which people often successfully tapped by means of subterranean galleries in order to ensure that the settlement and the underlying fields had a perennial water supply. The personal investigation of various troglodytic sites in the south-east and the central area of Sicily also revealed how many of these are likewise excavated into a brittle geological deposit, visually similar to the Maltese Mtarfa Member stratum. This was noted, amongst other areas, in various cave clusters at Pantalica, Cava d'Ispica, Scicli and its surrounding countryside area, and Enna (Fig. 4).

The majority of Maltese cave-settlements were probably subject to an organic type of development. Cave re-occupation and enlargement often involved the destruction of previous



Fig. 3 A cave excavated into the brittle Mtarfa Member deposit at Ta' San Gakbu in the territory of Rabat, Malta.

occupational phases and, in the absence of stratified deposits, dating is a difficult task.

The presence of animal troughs easily identifies caves utilised in the last phase of occupation as animal pens. Caves frequently cluster together into units, but isolated caves containing evidence of human or animal habitation are fairly frequent. Narrow slits in the cave screening walls sometimes act as windows, but this is a largely uncommon feature, only observed in a small number of cave units.

Dry-stone constructions frequently partition cave interior in to a series of individual spaces.

The exterior screening wall and sections of the caves' interior were occasionally plastered and whitewashed, but it is unknown if this was a widespread practice. A terrace, often present on the outside of cliff-face settlements, is a common addition aimed at linking two or more adjoining caves together. This feature also appears to be common to many of the Sicilian troglodytic settlements.

Two types of typologically different roofing strategies were observed in Malta. When the dry-stone screening walls were built c. 0.6 m apart from the overhanging rock-ledge roofing the cave, the intermediate gap was bridged and sealed by means of roughly sawn, thin, ashlar slabs (Figs. 5-6). These rested against the rock-face at an angle that generally varies between 20°

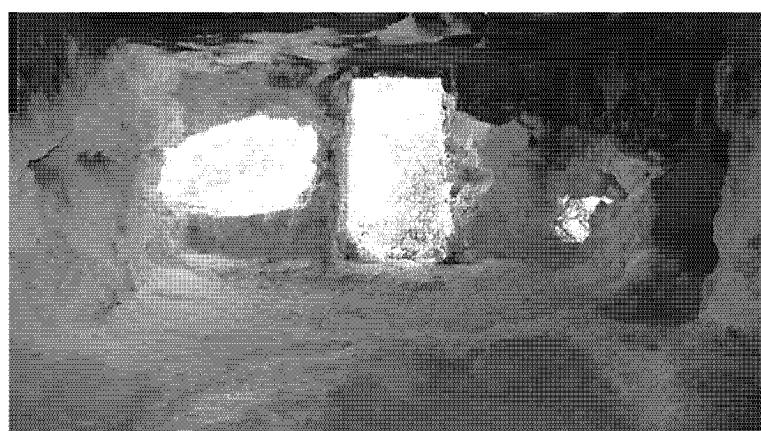


Fig. 4 Interior view of a Byzantine period cave at Valle dell'Anapo, Pantalica, Sicily. The cave is excavated into a brittle geological deposit which is visually similar to the Maltese Mtarfa Member deposit.

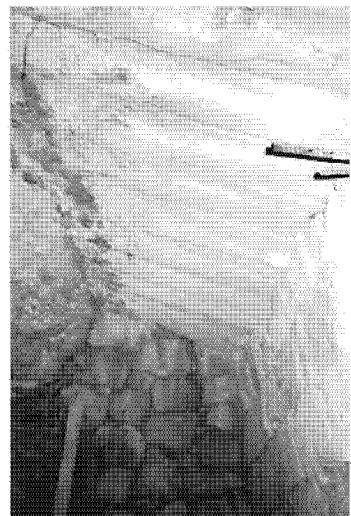


Fig. 5 Cave dug into the west face of the Il-Qlejha tal-Bahrija promontory in the territory to Bahrija, Malta.

Detail of mortar rendering covering the ashlar slabs bridging the gap between the screening wall and the overhanging rock-face.



Fig. 6 Ashlar slabs bridging the gap between the screening dry-stone wall and the overhanging cave-roof at Gnejn San Gakbu settlement in the territory of Rabat, Malta.

and 40°, and were secured in place and made water proof by means of mortar and a *deffun*²¹, or *cacciopesto* covering. This roofing technique was probably implemented in an attempt to gain more internal cave space. A similar type of roofing technique was in Sicily noted in a cave at the Monastery of San Corrado Fuori le Mura in the territory of Noto (Figs. 7-8).

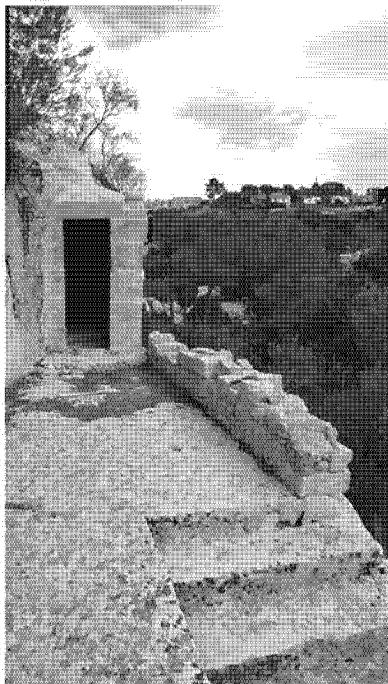


Fig. 7 Exterior view of the cave-screening wall and roofing system employed in a cave at the Monastery of San Corrado Fuori le Mura in the territory of Noto, Sicily.

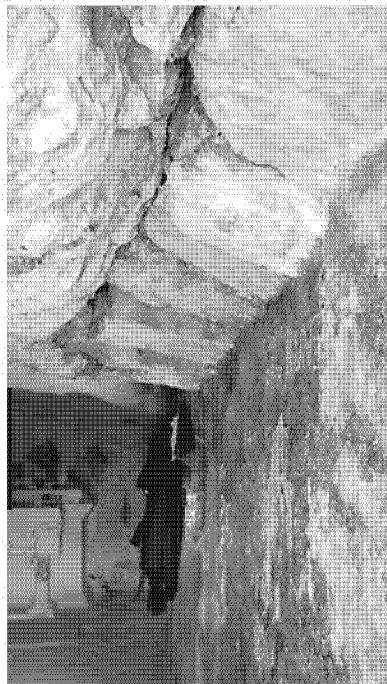


Fig. 8 Interior view of the cave illustrated in Fig. 7. Ashlar slabs bridge the gap between the overhanging cave-roof and external screening wall and were made watertight by means of a mortar rendering.

Light roof structures often covered caves with screening walls built at a distance of over 0.7 m from the overhanging cave roof. It is unlikely that any of the roof structures recorded in this survey predate the first decades of the 20th Century, but the materials utilised and the construction methods employed are probably similar to the late-medieval roofing methods recorded by Quintin in the 1530s²². Only dead vegetal material, easily obtained from the surrounding countryside was utilised. Unrefined carob and fig tree branches were often used as load-bearing members instead of timber beams and were normally spaced between 0.6 to 0.8 m apart. Large quantities of dried reeds bridged the gap between each beam (Fig. 9). A thick, compact layer of hay finally capped the roof, presumably tied to the beams in order to prevent its dispersal during rough weather. In sites located close to exposed clay deposits, it is possible that a thin clay layer lined roofs to improve waterproofing, but there is no evidence for this. In Sicily, a similar type of roofing structure was observed to be covering various cave-houses at Scicli and the Contrada Marafini area located in the countryside between Scicli and Modica (Fig. 10)²³. The surviving remains appear to date to the early 20th Century, but likewise might reflect earlier prototypes. The principal difference between Malta and Sicily is that in the

²¹ Deffun is composed of a mixture of ground pottery and lime.

²² VELLA 1980, p. 31.

²³ ZACCARIA 2011, pp. 151-171.

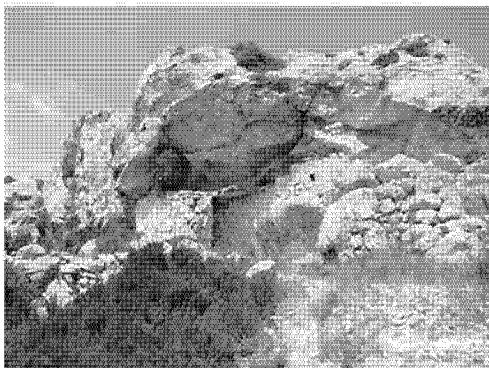


Fig. 9 Exterior room of a cave-complex partly covered by means of a light roof structure at Bafraja, Malta.



Fig. 10 Use of a light roof structure partly covering a cave unit at C.da Marafini in the countryside area between Scicli and Modica in Sicily.

latter instance, the reed layer appears to be frequently covered with a layer of lime and clay roofing tiles.²⁴

For centuries, the rural inhabitants of the island lived almost at a subsistence level. Cave-settlements, like other surviving rural structures, portray a marked absence of unnecessary ornamentation: they were conceived to be practical, rather than fashionable. Rectangular recesses hewn into the rock walls of caves were frequently utilised for storage purposes. Notarial deeds dating to the 14th and 15th Centuries that describe the furniture content of above-ground, late-medieval houses lead us to believe that habitable caves also contained few items of furniture: perhaps a table, door and a couple of other wooden furnishings. Settlements sometimes spread out on different levels, making the best possible use of the limited space available.

A study on the rural settlement of Simblija, in the outskirts of Dingli held in 2002, incorporates many of the above mentioned features²⁵. Simblija is an example of a late-medieval agricultural territory (*viridarium*), which still survives in its embryonic form, and consists of a combination of rock-cut and dry rubble constructions. The focal node of the settlement was an open square containing a structure probably used as a church, and a subterranean centimolo²⁶.

It is also worth noting that cave-dwelling was probably not limited to rural areas of Malta. Carlo Castone della Torre di Rezzonico wrote in a 1793 travel account that a number of families preferred to dig caves in the sides of the ditch surrounding Valletta and in the Cottonera area²⁷, rather than having to pay a housing rent.

The Perched Aquifer Water Galleries

In order to assess the water management strategies practiced in countryside areas of Malta containing cave-settlements of the cliff-face type, Wied ir-Rum, located within the territory of Rabat (Malta) is here presented as a case study.

Wied ir-Rum is a river valley carved out of an Upper Coralline Limestone outcrop due

²⁴ The antiquity of this roofing typology still has to be satisfactorily established. It is likely that the observed instances only date to the Early Modern period.

²⁵ SALIBA-MAGRO CONTI-BORG 2002

²⁶ BUHAGIAR M. 2003, pp. 15-21. See also ID. 2005, pp. 51-54.

²⁷ This is an agglomeration of the Birgu, Bormla and Senglea settlements.

to rainwater action. Together with the close-by Wied Hażrun, Wied ir-Rum is one of the most fertile districts of Malta, well renowned for its water sources and the quality of the cultivated crop (Figs. 11-12). The valley is composed of a number of adjoining giardini (orchards). In 1647, G. F. Abela listed these as *La Kattara, Tal Callus, Ta' Scierf, Di Baldu* and *Di S. Giacomo* (Plate 2)²⁸. Abela's description of Wied ir-Rum - *Valle de' Christiani Greci, amena, e piena di giardini d'ambe le parti, che rappresentano all'occhio una bellissima veduta, e somministrano al gusto buonissime frutta*²⁹, and its environs, gives the impression of a series of long established orchards, dependent on reliable water sources. Another glimpse of several of the Wied ir-Rum settlements can be gleaned from a detailed plan of the Mtahleb area drawn up in 1665³⁰. The plan's main focus is on the giardini of the Mtahleb district³¹, but does indicate the location of the *Giardino di Ain Teites, Giardino di San Giacomo, Giardino ta' Baldu and Giardino e Terre tal Qattara*.

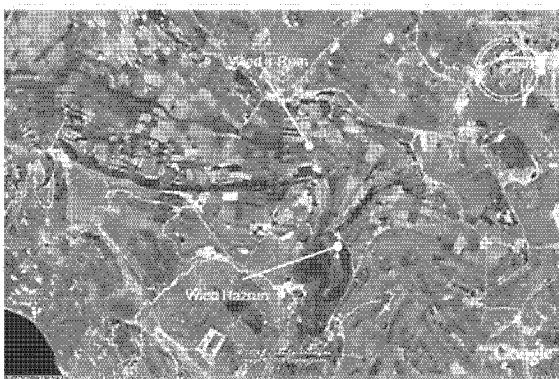


Fig. 11 Satellite view showing the Wied ir-Rum and the Wied Hażrun valley systems in the territory of Rabat, Malta.

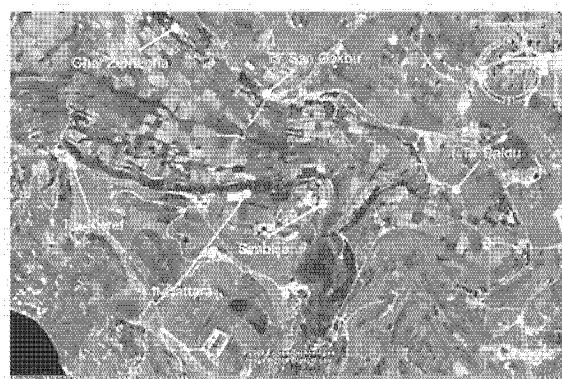


Fig. 12 Satellite image showing settlement spatial location at Wied ir-Rum, Malta.

The importance of Wied ir-Rum and the probability that this contained an already extant framework of *giardini* prior to the seventeenth Century, is strongly hinted by the 1551 and 1565 maps of Malta by Antonio Lafreri³² and Nicolo Nelli³³ respectively (Fig. 13). In both maps, it is significant that the spatial location of the only marked valley, captioned as *Vallone giardini* (valley orchards), corresponds with that of Wied ir-Rum. The maps illustrate what appears to be a watercourse passing through the valley bed and trees are depicted flanking the southern valley side. Wied ir-Rum is not mentioned by name, but the valley shape and its location on the western coast of Malta between the settlement of Tartarni and Mgarr, leaves little doubt as to its identity. The same applies to another map possibly produced by Tommaso Barlacchi also dating to 1565. From all the valleys in the western region of Malta, only what appears to be the Wied ir-Rum valley system is illustrated in a clear and well-defined manner³⁴.

²⁸ABELA 1647, p. 65. The modern equivalents of these toponyms are *Il-Qattara, Simblija, Tax-Xierf, Ta' Baldu, and Ta' San Gakbu*.

²⁹Abela describes Wied ir-Rum as, "The valley of the Greek Christians which abounds with horticultural gardens and which presents the visitor with a beautiful view and good tasting fruit" (*Ibidem*).

³⁰AIM Acta Civilia vol. 171, Case 12.

³¹These are namely Giardino ta' Haleun, *Giardino Granda* and *Giardino ta' Gobel Abiat*. It is through this plan that a water gallery in the *Giardino Granda* area, the name of which was formerly unknown, can now be securely associated with the *Aġyin il-Kibira* or *Fontana Granda* mentioned by Abela. See ABELA 1647, p. 66.

³²GANADO 2008.

³³GANADO-AGIUS-VADALA 1994, p. 29.

³⁴*Ibidem*, p. 40.

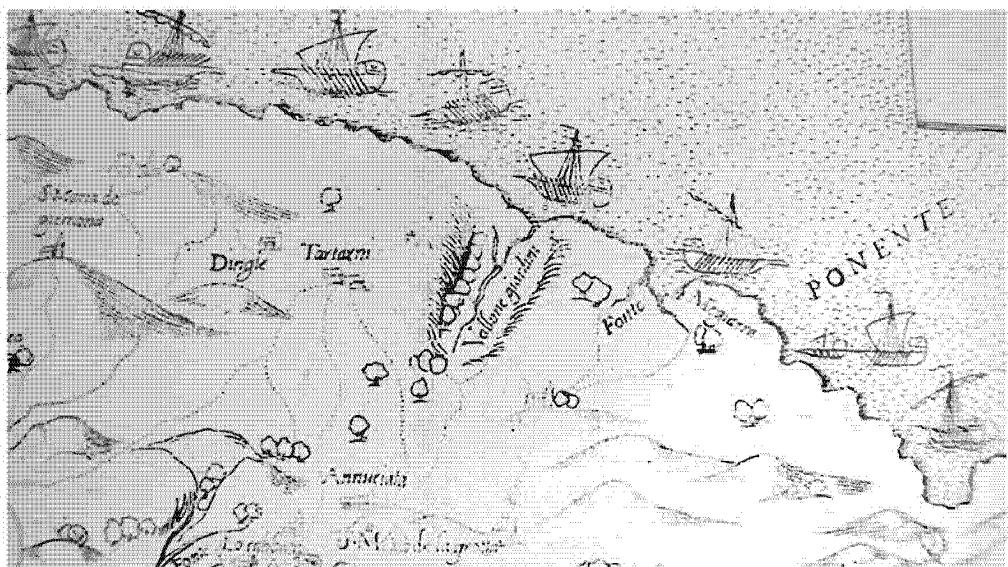


Fig. 13 - Detail of the 1565 Map of Malta by Nicolo Nelli probably showing the location of Wied ir-Rum in west Malta (after GANADO - AGUIS-VADALA 1994, p. 29).

Apart from its high landscape value, rich biological diversity and agricultural significance, Wied ir-Rum and the adjoining Wied Hażrun rank amongst the few essentially unspoiled Maltese archaeological landscapes. If key areas of both valleys are scientifically excavated, these could present the medieval archaeologist with much warranted data on Malta's rural medieval past and the landscape's development. A non-invasive archaeological investigation held between 1998 and 2003 succeeded in the identification of a number of man-made caves and rock-excavated water galleries³⁵. These are difficult to date with certainty, but probably belong to the late medieval and/or the early modern periods. Cave usage at Wied ir-Rum varied from sacred spaces, human habitation, animal pens, agricultural storage and animal driven mills *centimoli* (Pl. 2).

The life source of both Wied ir-Rum and Wied Hażrun consists of a series of rock-excavated galleries which retrieve water from the perched aquifer. Subterranean galleries are hewn into the brittle Mtarfa Member deposit which overlies the Blue Clay deposit and tunnel into the valley sides in order to tap into the perched aquifer (Fig. 14). The volume of retrieved water varies from gallery to gallery. Most of the galleries still retrieve a perennial water supply, sufficient to allow crop cultivation during the arid summer months. Water transportation within galleries is often facilitated by means of a shallow canal cut into the gallery floor.



Fig. 14 Interior view of a rock-cut, perched aquifer water gallery at Tas-Santi in the territory Migarr, Malta.

³⁵BUHAGIAR 2003.

The earliest known documented evidence for the presence of galleries at Wied ir-Rum dates to between 1623 and 1654 when there is the mention of two water springs in the Tal-Callus area, which the author successfully identified with agricultural land located to the immediate West of the Il-Qattara giardino: “[...] in detto Giardino vi sono due fontane, la grande sotto il balzo dalla parte di mezzo giorno, dove e la sua gebia per dentro la rocca, l'altra dalla parte di ponente, dove vi e ancora la gebietta”³⁶. In the case of the former water source, reference to the subterranean reservoir in which spring water accumulated, points towards the existence of a water gallery, the output of which was stored in an underground tank, fronting the gallery entrance³⁷. As indicated by the description of the Tal-Callus springs, the majority of water galleries at Wied ir-Rum are indeed fronted by subterranean water reservoirs. This arrangement was probably resorted to in order to prevent water evaporation during the warmer season. Water stored in subterranean environments also retains a lower temperature, which in turn discourages algal growth and bacterial contamination.

Water gallery distribution is not only limited to Wied ir-Rum area. Galleries are located in other areas of Malta and Gozo which possess the same geological stratification³⁸. Nonetheless, it is significant to note that the largest perched aquifer water gallery concentration detected in the Maltese archipelago to date, is found at Wied ir-Rum³⁹. Galleries are generally easily identifiable from their rectangular-shaped rock-cut entrance that is on average 0.8 m wide and a little more than 1.5 m high. Average gallery length is unknown, but several of the recorded water tunnels may well be several hundred metres deep. Most galleries provide the surrounding area with a perennial water source, though the volume of retrieved water varies from one gallery to the other. Galleries are generally level with the highest terraced fields in a valley, with water being gravity-fed to any adjoining and/or underlying fields by means of open stone canals.

It is not uncommon for a gallery to fork into one or more arteries. Some galleries just extract a small water trickle from the perched aquifer. The water level in others is simply too deep to wade through, making their investigation a hazardous ordeal. The accurate mapping of flooded galleries has only been possible since 2008, through the employment of an experimental, remotely operated submersible camera (ROV). Equipped with video and sonar sensors, digital compass, robotic arm and a Global Positioning System (GPS) locator, video footage and sonar scans of the investigated galleries are obtained⁴⁰.

The dating of Maltese galleries is a task which requires caution⁴¹. At Ta' Baldu, situated in the upper valley section of Wied ir-Rum (GR 4329 6993), a carved inscription rendered in cocciopesto records a 1629 date. This probably commemorates the occasion when a large subterranean reservoir was constructed and major changes brought about to an already extant perched aquifer water tapping system (Pl. 3). An adjoining gallery (Pl. 3; G), which originally fed the Ta' Baldu cave with water, appears to be of an earlier date⁴².

³⁶ NLM, Treas B 289, f. 84. The location of the Tal-Callus territory (located at map reference 42479 69973) was made possible through data obtained from early 18th Century plans (NLM, Treas B 290, f. 77; NLM, Treas 291, ff. 86-87) and a comparative analysis of land boundaries.

³⁷ The plan for the Il-Qattara gallery, also at Wied ir-Rum, gives an idea of such a setup. See BUHAGIAR 2007, p. 121.

³⁸ *Ibidem*, pp. 119-121.

³⁹ *Ibidem*, p. 119.

⁴⁰ OLSTALD et. al. 2010, pp. 399-411. See also: <http://users.csc.calpoly.edu/~cmclark/MaltaMapping/>

⁴¹ VELLA-SPITERI 2008, p. 25.

⁴² BUHAGIAR 2003, pp.164-173; ID. 2003 b, pp. 44-45.

The mention of *giardini* in a 1551 map of Malta by Lafreri⁴³ is also significant. Systematic field research in north and north-west Malta and parts of Gozo, was successful in demonstrating how in most instances, *giardini* obtained their perennial water source from subterranean galleries. On-going research strongly hints that in areas of Malta and Gozo possessing Upper Coralline Limestone and Blue Clay deposits, water galleries formed an integral part of the *giardino* framework. Furthermore, it is likely that perched aquifer galleries already featured in the pre-Knights' period Maltese landscape. The first known reference to a *giardino* in Malta is at Gomerino estate in the territory of Rabat, and dates to 1317⁴⁴. It is also significant that at Ghajn Qajjied, *Għajnej Stas* and *Għajnej Hammie*, the first mention of which dates to 1361, 1372 and 1436 respectively, the springs originate from water galleries⁴⁵. Dating to 1372-3 is a mention of *fons Għien Rumen* (fountain/spring at Gnien ir-Rummien), at Gozo⁴⁶.

Furthermore, Maltese galleries bear a resemblance to the Qanat-type water extraction systems which possibly filtered into Malta through neighbouring Sicily during the late medieval period⁴⁷. Of the Sicilian galleries, the Palermitan ones are the best documented. Ceramic fragments recovered from within a secure archaeological context in a qanat system at villa Raffo (Palermo), are of a twelfth or thirteenth century date⁴⁸. Personal field trips to Sicily have succeeded in the identification of other galleries at the Castello di Lombardia at Enna, S. Lucia di Mendola and Ferla, both in the territory of Syracuse, and Morgantina⁴⁹ in the territory of Catania (Fig. 15-16). More extensive investigation of these water systems is necessary, but their context is seemingly representative of a Late Medieval date.



Fig. 15 Interior view of a rock-excavated water gallery, tapping a ground water source in the territory of Ferla, Sicily.

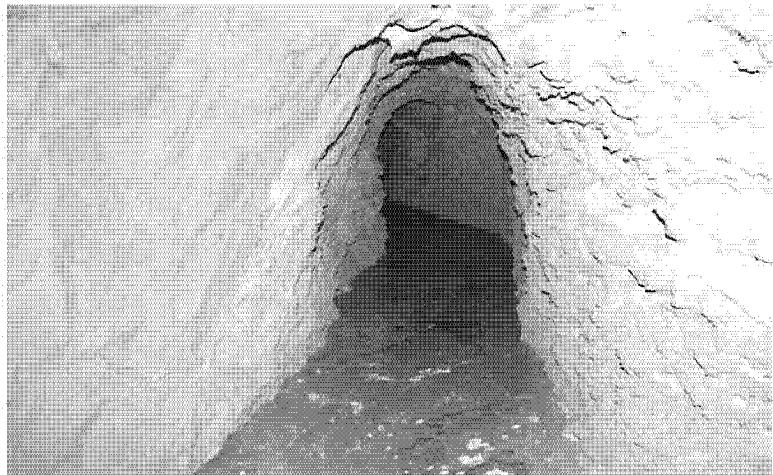


Fig. 16 Interior view of the 'Conti' water gallery at Morgantina, Sicily.

Elements making up a real qanat system consist in the excavation of a near-horizontal gallery responsible for extracting a perennial water source and a series of vertical shafts piercing the gallery roof⁵⁰.

⁴³ GANADO 2008. *Giardino distribution in South Italy was largely boosted during the Norman period. See MARTIN 2002, p. 19.*

⁴⁴ BRESC 1975, p.152.

⁴⁵ WETTINGER 2000, pp.184-188-190.

⁴⁶ BRESC 1975, p.130.

⁴⁷ BUHAGIAR 2007, pp.118-122.

⁴⁸ BIANCONI-TUSA 1997, pp. 385-387.

⁴⁹ The existence of water galleries at Morgantina was brought to my attention by Dr Sandra Lucore of the American School at Athens. See also CROUCH 2004, p. 57.

⁵⁰ GOBLOT 1979, pp. 25-36.

Shafts were of key importance in qanat excavation. It was through the excavation of a principal shaft, more commonly referred to as *mother well*, that water presence was first detected. In the post qanat excavation phase, shafts allow easy access to areas of the gallery system needing maintenance. It is probable that not all Maltese and Sicilian galleries are 'true' qanats. The emerging picture hints at the prospect that whilst galleries in Malta tunnelling below urban settlements frequently contain shafts⁵¹, rural galleries do not. Known exceptions to the latter instance are water galleries at Gomerino and possibly Lunzjata, both in the territory of Rabat (Malta), Tas-Santi in the territory of Mgarr (Malta), and Ghajn Żnuber in the territory of Mellieħa⁵². One or more shafts are also possibly present at the water gallery of Aayn il Kibira, the life source of Giardino Grande at Mtahleb. In a 1656 plan of the area⁵³, the garigue land overlying the gallery is marked as *Xara ta' li Ispera*, meaning 'the well's garigue'.

Also present within the precincts of Wied ir-Rum is the existence of a subterranean bath, first published in 1869⁵⁴. The bath consists of a small, circular, rock-excavated chamber accessed by descending a flight of four rock-cut steps (Pl. 4). The bath was once more identified and republished during the survey of the Ta' Baldu area held by the author in 1999⁵⁵.

The bath's interior is fairly well preserved, and consists of rock-walls which are completely plastered over by means of a cocciopesto-type of grey-coloured mortar, and a circular bench which perimeters the chamber's circumference. The bath was provisioned with a perennial water source obtained from an adjoining water gallery, linked to it by means of a small rectangular-shaped water tank (Pl. 4; C). From this tank, water was gravity-fed through terracotta or lead pipes, to a fountain which acted as a centre piece to the bath setup (Pl. 4; D). Cut into the floor of the bath's interior adjacent to the access doorway, is a rectangular-shaped shaft (Pl. 4; E). This contains three terracotta pipes still in situ, the function of which was to drain the surplus water elsewhere. Water level within the bath was probably controlled by regulating the water flow through the pipes at this point. There is no evidence for water heating at Ta' Baldu.

The bath, is to my knowledge, typologically unique to Malta and cannot be compared to other local examples. Its interior is void of archaeologically-relevant deposits, but future scientific subsurface investigation of the fronting and adjoining fields, will hopefully give a better indication as to the bath's approximate date. A. A. Caruana, probably deceived by the presence of an olive pipper in the close-by Għar ta' Baldu, dated the bath to the Roman period⁵⁶. Likewise, when publishing a brief report announcing the bath's re-discovery in 2000, this was once again tentatively associated with a Roman period relic⁵⁷. On the other hand, basing myself on formerly unavailable evidence, a reinterpretation of the remains hints a Late Medieval or Early Modern date as being more probable. The bath is typologically similar to other rock-excavated subterranean chambers in Palermo, Sicily, known as *Camere di Scirocco*⁵⁸. The earliest documentary evidence for such chambers at Palermo comes from Palazzo Marchesi, and dates to the late fifteenth Century⁵⁹.

⁵¹ The Mdina/Rabat settlements in Malta and the Palermo settlement in Sicily are such instances.

⁵² MORRIS-SHEET 1952, p. 17.

⁵³ AIM Acta Civilia vol. 171- Case 12.

⁵⁴ CARUANA 1882, p. 93.

⁵⁵ BUHAGIAR 2000, pp. 50-51.

⁵⁶ CARUANA 1882, p. 93

⁵⁷ BUHAGIAR 2000, p. 50.

⁵⁸ The existence of Camere di Scirocco was brought to my attention by Dr Nicholas Vella of the Department of Classics and Archaeology at the University of Malta. Scirocco is the hot dry wind that originates in the Sahara region and blows across the Mediterranean Sea into Southern Europe.

⁵⁹ TODARO 1989, p.122; ID. 2002, p. 87.

Camere di Scirocco are in essence rectangular or circular shaped rock-excavated chambers, the water supply of which is obtained by means of an underground spring or an adjoining subterranean water gallery. Their underground location, the flow of water and the presence of an aeration shaft, created a pleasant and refreshing microclimate during the warmer months of the year⁶⁰. Camere di Scirocco became fashionable amongst upper class Palermo residents during the course of the seventeenth and eighteenth centuries, and were probably inspired from earlier medieval period chambers for which only indirect and limited evidence survives⁶¹. The principal difference between the Ta' Baldu bath and the Palermitan cooling chambers is the absence of an aeration shaft in the former.

The rural landscape context within which the Ta' Baldu bath is located is of a probable late medieval date. More accurate dating can perhaps be established through the scientific analysis of mortar lining the bath interior. The reliability of mortar dating has been successfully tested on securely dated Punic period cisterns at Pantelleria⁶².

The rock-cut Churches and Oratories

Maltese rock-cut churches can be divided into two different categories: urban and rural. Whilst the setting in which they are located is different, both share a number of common characteristics and are the product of the same religious pressures and social-cultural conditions. The urban churches lie within the precincts of palaeochristian hypogea and tend to show a greater preoccupation with architectural enhancement and elaboration than their rural counterparts⁶³. Rural rock-cut churches are in contrast more simplistic and form an integral part of the troglodytic landscape in which they are located. Cave churches adjoin cliff-face settlement sites and are almost exclusively excavated into Mtarfa Member rock-deposits. As is the case with the cave church dedicated to St Nicholas at Mellieħa, which gave its name to the underlying valley, troglodytic churches must have been a landmark within the context of the late medieval Maltese landscape. The same applies to the cave churches of St Peter in the territory of Naxxar and St Brancatus at Ghargħur, the dedication of which was assimilated in the toponomy of the surrounding area⁶⁴.

Rural cave churches were of a rather intimate size, had a dimly lit interior, and were frequently accessed from the rock-terrace which connected two or more cave settlement units. The cave church exterior was commonly enclosed by a dry-stone wall, the only means of interior access being a narrow square-headed doorway. The diffused nature of the troglodytic phenomenon and rock-excavated churches in late medieval north and north-west Malta is perhaps illustrated by the fact that the principal cave church of Mellieħa occupied the status of a parish in the fourteenth century, and assisted the spiritual needs of nearby cliff-face settlements⁶⁵.

Both rural and urban churches were probably fitted with either masonry or wooden altars and in the instance of the cave church of St Leonard in the territory of Rabat (Malta), and that dedicated to St Peter at Naxxar, there is evidence of a flagstone floor in the interior, or

⁶⁰ TODARO 2002, pp. 80-81.

⁶¹ ID. 1989, p. 122.

⁶² Data obtained for the *International Conference on Ancient and Modern Water Storage* organised at Pantelleria by the University of Tübingen, 11th to 14th May 2011.

⁶³ BUHAGIAR M. 2005, p. 58.

⁶⁴ BUHAGIAR 1997, pp. 84-86.

⁶⁵ WETTINGER 2002, pp. 41-47.

a cobbled passageway facilitating access to the often difficult-to-reach entrance. Cave church interior furnishing was probably sparse, with *dukkien* (rock-excavated benches aimed at providing seating accommodation)-type benches sometimes excavated into the rock-face along the side walls. Several of the surviving churches were decorated by murals which survive in a precarious state of preservation. The surviving murals speak a common iconographic language and are Siculo-Byzantinesque in tradition and inspiration⁶⁶.

The dating of both urban and rural churches is difficult and constant cave reutilisation makes it improbable that any archaeologically relevant deposits survive within. In many instances the area fronting caves, including cave churches, has been too disturbed to make its archaeological assessment a viable exercise. The most reliable dating source remains the art historical analysis of the preserved murals, with those surviving at Abbatija tad-Dejr and the rock-cut oratory of St Agatha's catacombs, both at Rabat (Malta), being the most important. The analysis of the sinopia of a possible *Deësis* (the representation of a blessing Christ, the Virgin Mary and St John the Baptist) located in the apsed niche of the east wall in Oratory I at Abbatija tad-Dejr, coupled with data furnished by a nineteenth century report on the painting, hint at a work of art which stylistically comes from the milieu of Siculo-Norman Sicily, where similar representations of Christ the Pantocrator are frequently encountered in the rock-cut and built churches⁶⁷.

Within the same oratory at Abbatija tad-Dejr are two other murals, probably showing the archangel Michael and St John the Evangelist. The icons are contained within a deep red frame and probably carried the legend with the saints' names in Latin characters. The combination of the Byzantine style with Latin text is another reliable dating element, even though such an artistic style remained a standard practice locally till at least the fifteenth Century⁶⁸.

Another mural painting surviving within the adjoining Oratory II at Abbatija tad-Dejr, today on display at the National Museum of Fine Arts at Valletta, shows the fusion of the Crucifixion and the Annunciation scenes—the amalgamation of both themes suggesting a fourteenth century date⁶⁹, and parallels closely a painting at the Grotta dei Santi at Monterosso Almo at Ragusa, Sicily, which also seems to be of a coeval date⁷⁰. Similarly, another two Siculo-Byzantinesque icons survive in an oratory at St Agatha in Rabat. It is probable that the icons belonged to a more extensive fresco-cycle destroyed in the late-fifteenth Century or early sixteenth century to make way for a series of Late Gothic devotional images⁷¹.

The existence and location of a number of rural Late-Medieval troglodytic churches faded from popular memory, thus necessitating their rediscovery. A rural cave-church recently identified by the author as the cave-church of San Ġakbu (St James), at Wied ir-Rum in the territory of Rabat (Malta), incorporates several of the above mentioned features. Access to the cave-church is by means of a badly weathered footpath which from the Ta' San Ġakbu plateau leads down to a terrace to which are connected three separate caves, two of which appear to have been of cultic significance. The first cave is apse-shaped and roughly measures 6.9 by 3 m (Fig. 3). This is located at the eastern most extremity of the terrace and with the exception of a

⁶⁶ BUHAGIAR M. 2007, p. 98.

⁶⁷ MESSINA 1979, p. 49. Also see BUHAGIAR M. 2005, pp. 59-61.

⁶⁸ *Ibidem*, p. 61.

⁶⁹ *Ibidem*, p. 63.

⁷⁰ MESSINA 1979, p. 117.

⁷¹ BUHAGIAR M. 2005, pp. 65-66.

narrow doorway, the cave's mouth is totally screened off by a badly damaged dry-stone wall. Dug into the brittle Mtarfa Member deposit, the cave's low ceiling and part of its interior walls are badly weathered, primarily due to wind erosion. Notwithstanding this, the north cave wall still retains a series of cross carvings, the most prominent of which is a Greek cross measuring 25 by 27 cm. The other cross carvings consist of a pedestalled cross and what appears to be a St Peter's cross (Fig. 17). A number of lamp holes and niches are also hewn in this area of the cave. Carved into the far north-east corner of this cave is a badly weathered date which seemingly reads 1890.

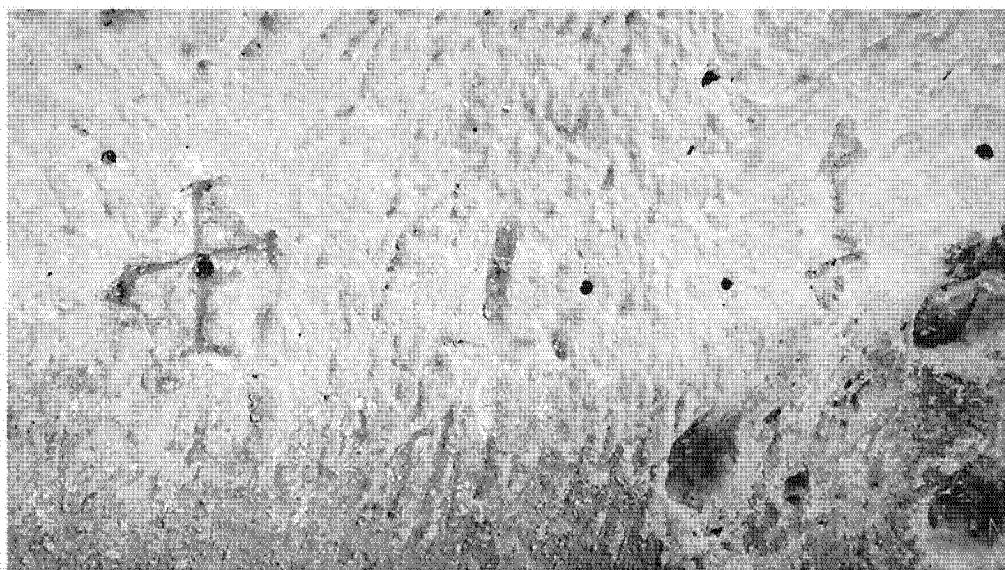


Fig. 17 Detail of the crosses carved into the innermost wall of a cave, having a probable cultic association, in the territory of Ta' San Gakbu at Wied ir-Rum, Malta.

The '18' and '90' are separated one from the other by what possibly was another Greek cross carving, of which only one the upper end forked finial survives. The close scrutiny of the '1890' date carving gives the impression that it is the work of a different hand. The date carvings are shallower and much less defined than the formerly described crosses.

In the northwest wall of this cave is a large recessed niche, above which is another cross carving. A square-headed doorway gives access into a small rectangular shaped chamber measuring 1.64 by 3.19 m is excavated (Fig. 18). Tool markings preserved in the chamber's ceiling and walls are distinctly different from those preserved elsewhere in this cave, alluding to the probability that this did not form part of the cave's original setup. The rock cut ledge flanking the chamber's left hand door jamb might have been possibly used as a dukkien - a rock excavated or masonry built bench commonly found within a late medieval domestic or ecclesiastical setup. Interpreting this cave is a complex task, but the carved features within lead me to speculate that its use was perhaps connected to that of the other cave described hereunder.

What appears to be the most important cave of the lot is located on the western most extent of the rock terrace (Pl. 5) and directly overlies the water gallery. This cave's entrance is partly screened off by means of a dry-stone wall. The cave has an almost square-shaped interior plan, with the floor being at a lower level than that of the outside terrace (Fig. 19). This subterranean rock-excavated space is extremely well-cut and has a surprisingly high ceiling.

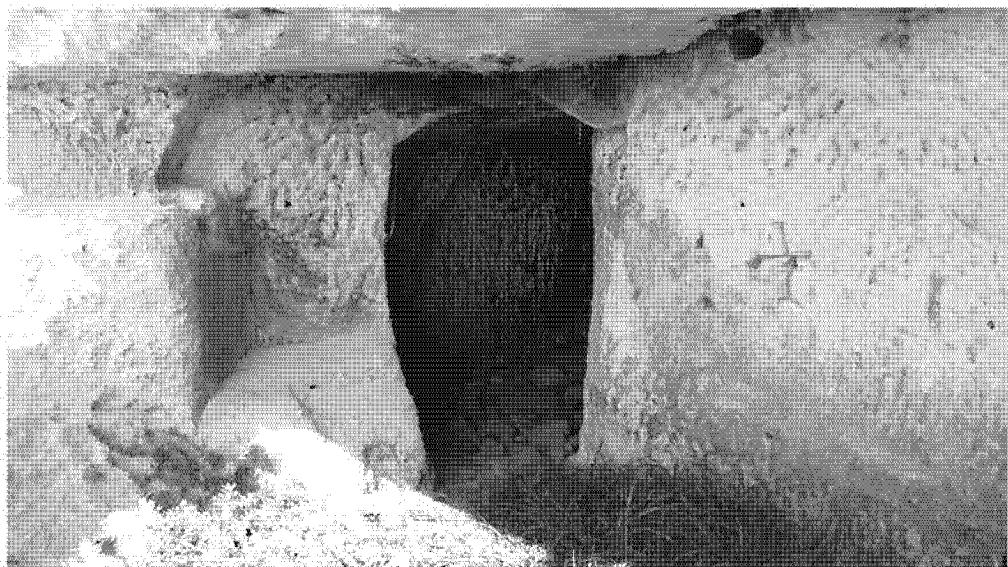


Fig. 18 Interior view of the cave illustrated in Fig. 17. A large recessed niche gives access into a crudely carved rectangular-shaped chamber of a probable later date.



Fig. 19 General view of the interior of a finely rectangular-shaped cave at Wied ir-Rum, Malta, which this study tentatively associates with the Church of St John mentioned in a 1575 account.

Its degree of architectural sophistication and the neat layout are noteworthy, especially when compared to that of other caves found in the surrounding area. Interior refinement is even more remarkable when considering that a sizeable portion of the cave, including the ceiling area, is shaped out of the hard Tal-Pitkal Member deposit. The fact that the ceiling exhibits the same degree of refinement as the cave walls is significant. Personal experience has shown how in the majority of instances, cave ceilings tend to be the least refined areas within man excavated caves and that the degree of refinement exhibited in this cave must have been a rather labour intensive ordeal.

The cave measures 8.05 by 6.11 m and has an approximate ceiling height of 3.86 m. Four animal feeding troughs (Pl. 5; A), flank the west and east walls of the cave and are probably the result of a subsequent reutilisation of this rock-excavated space. Marked 'B' are two niches or storage recesses. Well-defined natural vertical joints are clearly visible in the Tal-Pitkal and Mtarfa Member deposits within which the cave is excavated, and encourage rain water seepage. This accounts for the relatively damp interior, which most seriously afflicts the north wall of the cave. Unwarranted water seepage probably led to the excavation of a canal above recesses 'B' and marks an attempt at deviating the seeping water away from the cave floor. Dampness within the cave encourages the growth of a viscous black coloured type of mould which typically thrives in such humid environments and envelops significant sections of the interior. An inspection of the cave walls did not reveal the presence of any whitewashing or mortar rendering. Stone chippings and fine loose earth covers the entire interior floor section.

Establishing an approximate dating and usage for this cave is a challenging task. Well defined tool marks preserved in the wall and roof sections, hint that the layout is the result of piecemeal development. The cave refinement, location and general setting makes it tempting to correlate this subterranean space with the long lost church dedicated to St James (San Gakbu), known to have existed at Wied ir-Rum⁷². Particularly intriguing are a series of crosses carved into its west wall and ceiling. Clearly identifiable at 'C' (Pl. 5), are two Latin crosses and another cross containing crossbars⁷³ at the end of each of its arms. Several of the lamp niches clearly postdate the cross carvings. The right flank of the middle cross, and a section of the bottom crossbar of the right hand cross (Fig. 20) are mutilated by lamp holes. In the ceiling,

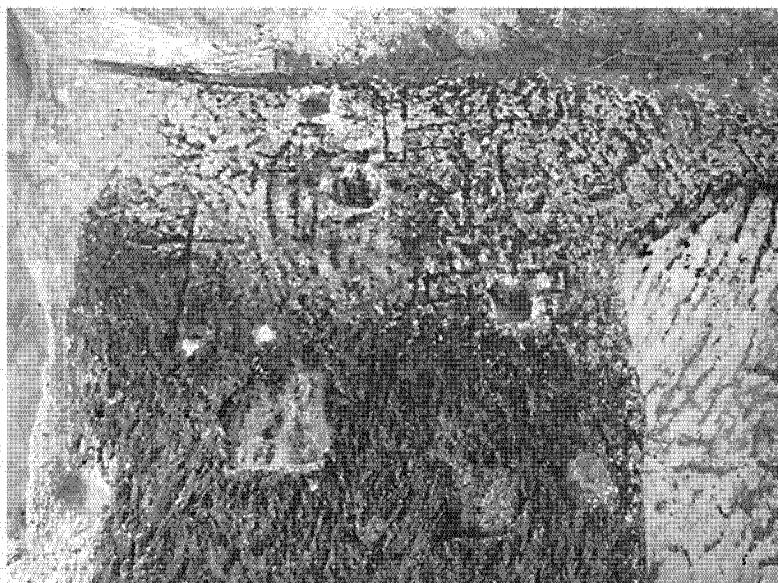


Fig. 20 Interior detail of the cave illustrated in Fig. 19. Detail of the various cross-carvings present in the west wall of the cave.

⁷²This church was immortalised in history following the 1575 visitation report by Pietro Dusina. See DUSINA 1575, p. 168. The original Latin text reads: "Sancti Jacobi Apostoli Gnebrum. Visitavit etiam Ecclesiam sub vocabulo Sancti Jacobi Apostoli, quae erat introitibus et rectore, pavimento, articulo, et ornamentis verum causa devotionis patroni viridiorum conciacionum in dicta Ecclesia in die festivitatis Sancti Jacobi celebrari faciunt missam, et a parte superiori intus defuit pluvia. Dominus mandavit nullo pacto [f. 163] in dicta Ecclesia amplius celebrari, nisi prius refaciat portis lignis, ac tecto, et pavimento restauratis."

⁷³This can be tentatively identified with a cross potent.

alongside wall niche 'B' are another two well-defined carved Latin crosses.

The interior plan of the presumed cave-church of San Gakbu closely parallels that of another rock-excavated church dedicated to Maria di Piedigrotta at Scicli, Sicily (Fig. 21). The importance of 'Cave 3' at Ta' San Gakbu is also hinted at by the presence of an underlying water gallery⁷⁴. Typologically, this setup is identical to the cave church of St Leonard at Lunzjata in the territory of Rabat (Malta), where the cultic space, also directly overlies a water gallery. The Lunzjata gallery was partly investigated using a remotely operated submersible in March 2009 and was found to be over 90 m long and possibly contains a series of circular shafts which



Fig. 21 Interior view of the rock-excavated church dedicated to Maria di Piedigrotta at Scicli, Sicily.

Siculo-Greek Monasticism

Even though there is no direct historical documentary evidence, it has been proposed that in post-Islamic times, several of the Maltese cave-churches were administered by Greek-rite Basilian monks⁷⁵. This hypothesis is based on Sicilian and Pantellerian models where Greek-rite monks operating from rural monasteries and anchoritic stations saw to the spiritual needs of rural, often isolated communities⁷⁶. Much of the argument centres round the meaning of the word *dejr*, which can mean either a cow shed, or animal pen or a monastic building⁷⁷. Used all over the Islamic East, Muslim Sicily and Spain, *dejr* is often associated with a Christian monastic establishment. Whilst making no distinctions between Greek and Latin-rite clergy, historical Sicilian documentation favours the presence of Greek monks who carried out their evangelisation programme amongst the Muslim communities of the island.

⁷⁴For a write-up of the Lunzjata cave-church at Rabat (Malta) refer to:
http://kasa.officinastudiorummedievali.it/cd/risorse/Libro/Malta_and_Sicily.pdf

⁷⁵For information on the Malta Cistern Exploration Project refer to:
<http://users.csc.calpoly.edu/~cmclark/MaltaMapping/>

⁷⁶BUHAGIAR M. 2007, pp. 317-38.

⁷⁷LUTTRELL 1975, pp. 37-38.

⁷⁸WETTINGER 2000, pp. 107-108.

Local archaeological evidence does hint in an indirect manner towards the presence of Greek-rite monasticism, but the issue is still the subject of debate and necessitates further scholarly investigation. So far, none of the known cave churches and troglodytic settlements can be associated with monastic establishments, but of particular interest is the site of Abbatija tad-Dejr, where an impressive palaeochristian burial complex was re-utilised as a cult centre during the post-Muslim period and is the foremost contender for a Greek-rite site during this period⁷⁹. *Raheb* toponyms may also offer valuable clues on this issue, with the word either meaning monk or hermit. The modern Maltese word for monk is *patri*, derived from the Italian *padre*. There is the possibility that *raheb* was used to denote an Augustinian friar during the late medieval period, but, in all probability, the word's linguistic origins recall a pre-late fourteenth century date. It is furthermore significant that the name of a field located close to the Abbatija tad-Dejr site is *Bir Rbiebu* (the monk's well)⁸⁰.

Conclusions

During the last two decades, historical and archaeological research has registered progress in the Maltese medieval field of study, but the archaeological potential of the local countryside is still barely considered. The past human impact and exploitation of large tracts of the island's rural landscape and resources remain unstudied. Although by no means a conclusive study, I hope that this paper will lead to an increasing awareness of the archaeological potential that the Maltese countryside still has to offer. None of the elements of this landscape is yet scientifically dated, but comparative work suggests close associations with neighbouring Sicily and particular areas of South Italy. The south east Sicilian territory and the Puglia region for instance have a semi-arid type of climate, water-carved valleys, and garigue areas of karst formation and terra rossa (red-coloured soil deposits) which closely parallel the Maltese scenario. The perched aquifer water galleries recorded within the Maltese landscape hint at a close association with Sicily.

For centuries, the rural inhabitants of Malta lived almost at a subsistence level. They did not try to conquer or crush nature, but attuned to the challenge posed by topography. Cave-settlements portray a marked absence of unnecessary ornamentation and were conceived to be practical rather than fashionable. Each Maltese troglodytic settlement is unique and size, asymmetry and usage create endless combinations. Troglodytic settlements and any adjoining above ground vernacular architectural elements are often the result of successful human interaction with the landscape. These frequently complement and form an integral part of their natural surroundings.

Future research in Malta will explore possible ways by which the agricultural landscape, cave-settlements and the water galleries discussed above, can be scientifically dated. Of hindrance to this challenging exercise is the possibility that many of the caves under study may have been abandoned as late as the first half of the 20th Century. This would have resulted in major disturbance of the older layers. Moreover, it is likely that most cave-units only preserve shallow internal deposits and probably lack stratification. It is also the hope of the author that future research efforts will be directed towards the study of Sicilian troglodytic settlements and

⁷⁹ BUHAGIAR M. 2005, pp. 58-60.

⁸⁰ *Ibidem*, pp. 58-61; ID. 2007, p. 95.

the countryside at large. This will hopefully lead to a better understanding of the cross-cultural influences which during the course of the Late-Medieval period filtered into Malta through the Sicilian experience.

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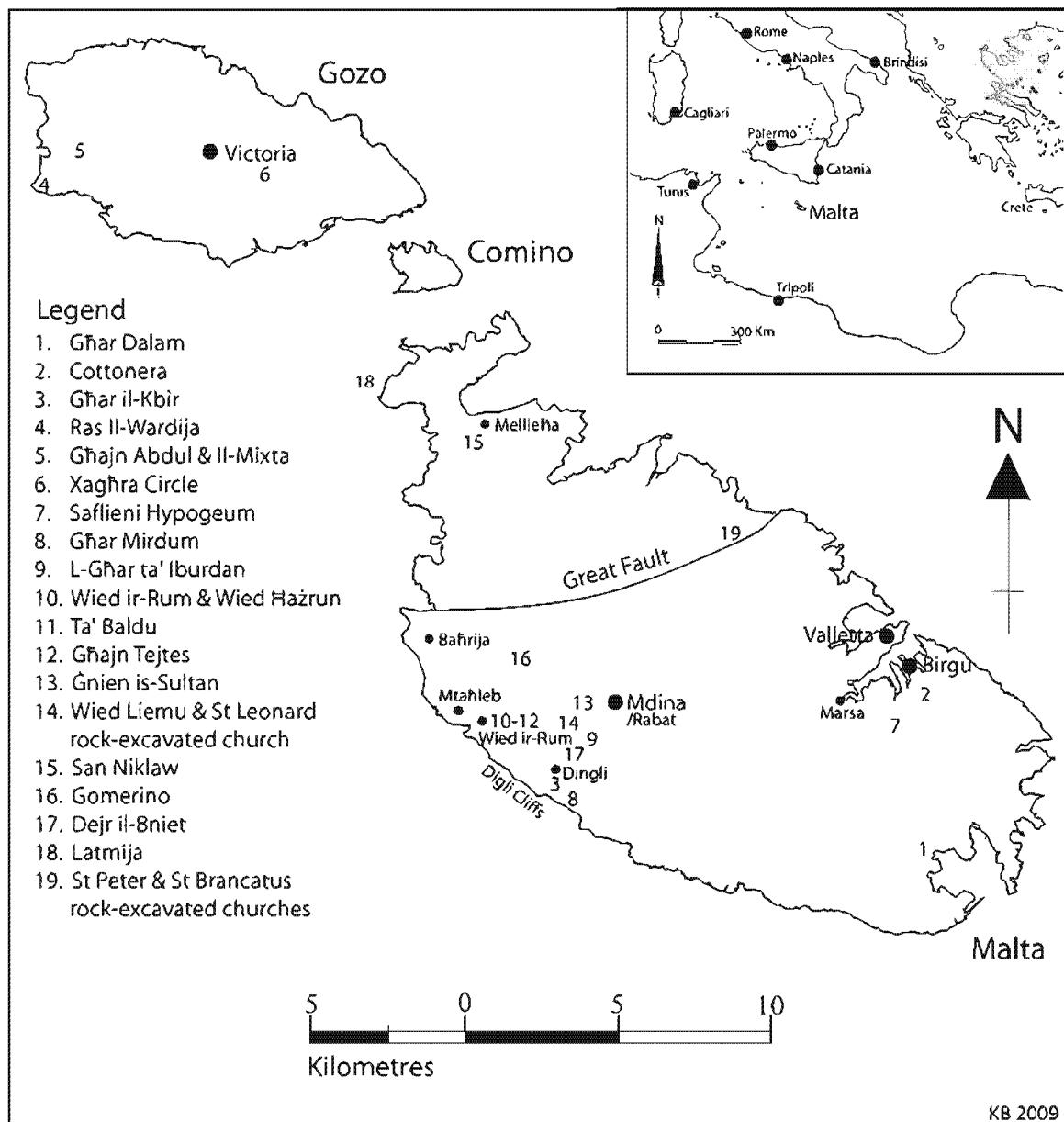
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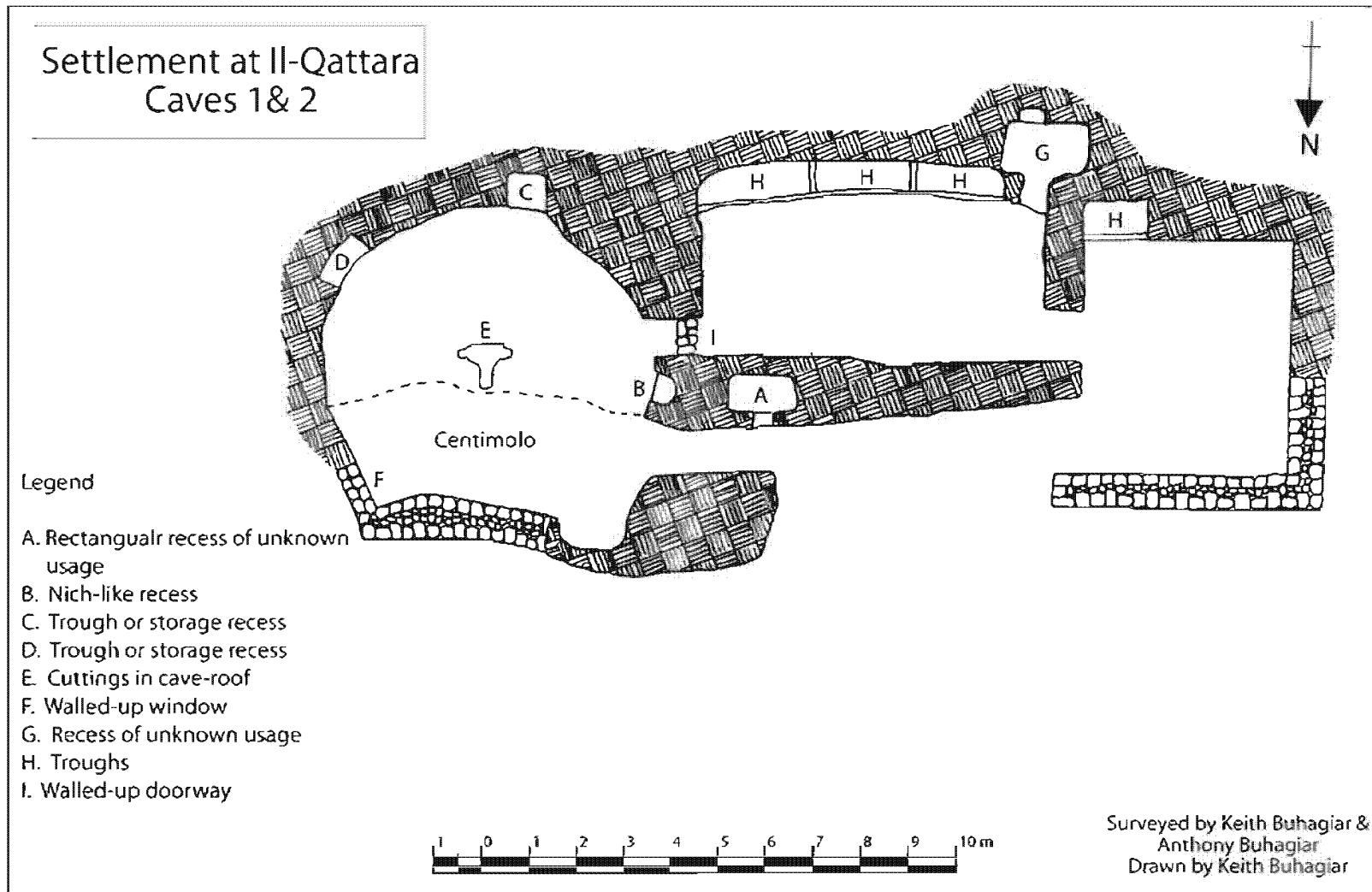
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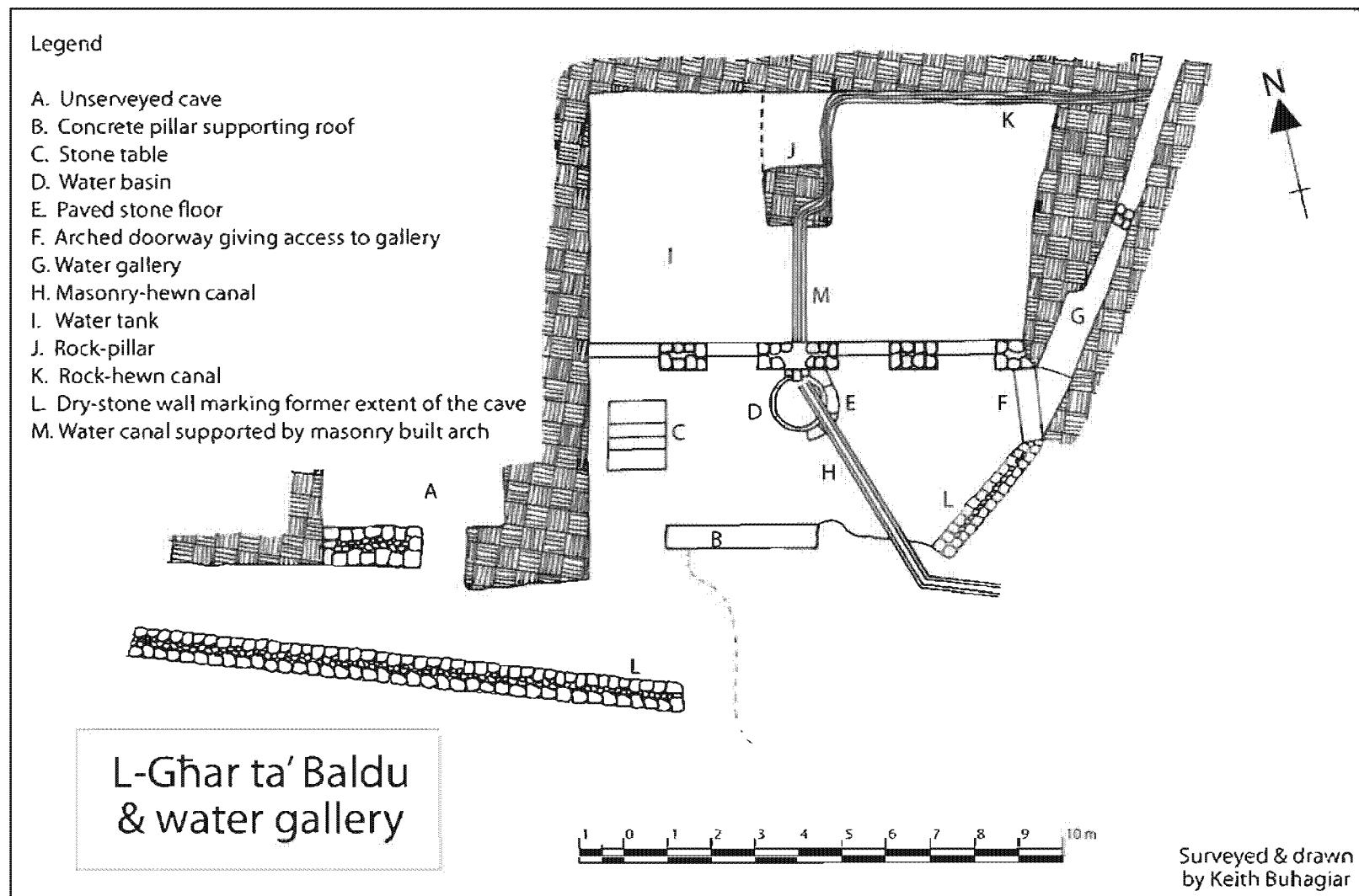
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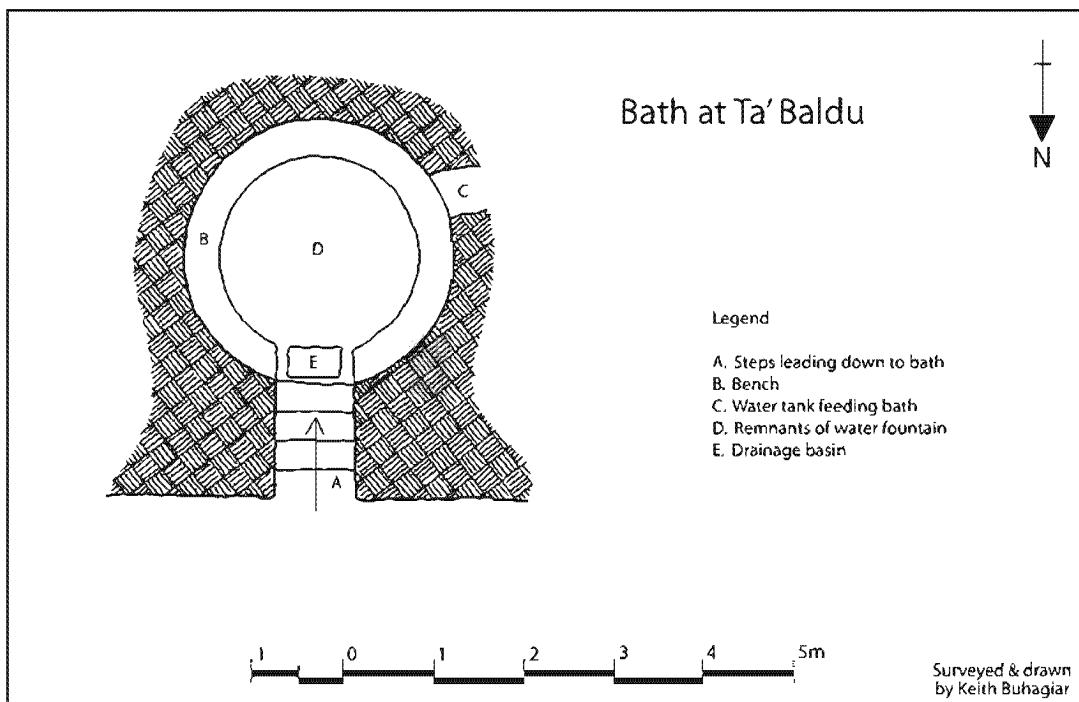
Pl. 1 - Map of the Maltese Archipelago showing toponym spatial distribution.

Pl. 2 - A probable centimolo at II-Qattara in the territory of Rabat, Malta.

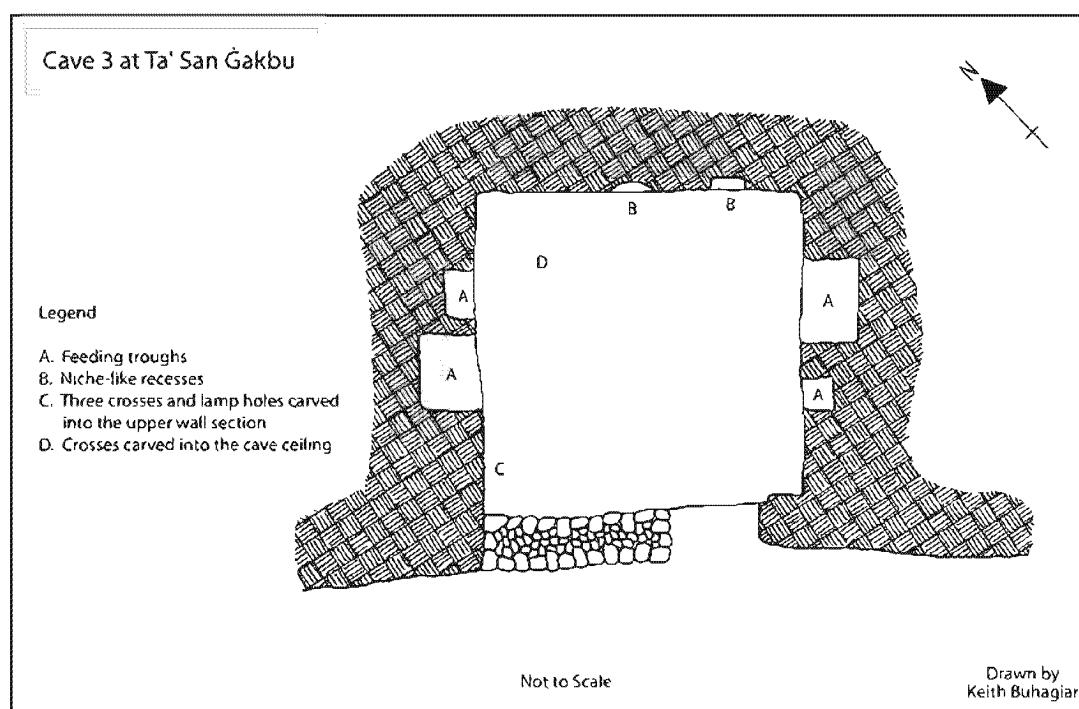




Pl. 3 - The Għar ta' Baldu water gallery and the adjoining subterranean reservoir at Wied ir-Rum, Malta.



Pl. 4 - This subterranean circular-shaped bath at Ta' Baldu is typologically similar to other rock-excavated subterranean chambers in Palermo, Sicily, known as *Camere di Scirocco*.



Pl. 5 - Plan of a finely cut rectangular-shaped cave at Wied ir-Rum, Malta, which this study tentatively associates with the Church of St James, mentioned in 1575 account.