
The Maltese Archipelago at the Dawn of History

Reassessment of the 1909 and 1959 excavations at Qlejgħa tal-Baħrija and other essays

edited by

Davide Tanasi and David Cardona



The Maltese Archipelago at the Dawn of History

Reassessment of the 1909 and 1959
excavations at Qlejgħa tal-Baħrija
and other essays

Edited by

Davide Tanasi and David Cardona



ARCHAEOPRESS PUBLISHING LTD
Summertown Pavilion
18-24 Middle Way
Summertown
Oxford OX2 7LG

www.archaeopress.com

ISBN 978-1-78969-493-2
ISBN 978-1-78969-494-9 (e-Pdf)

© Archaeopress, Davide Tanasi, David Cardon and the individual authors 2020

Cover: Aerial photograph of Qlejgħa tal-Baħrija, © Daniel Cilia



This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.

This book is available direct from Archaeopress or from our website www.archaeopress.com

Contents

List of Figures	iii
Introduction	1
Davide Tanasi, David Cardona	

Part I

1. Il-Qlejgħa tal-Baħrija: the story	3
David Cardona	
2. Il-Qlejgħa tal-Baħrija: an archaeological survey	19
MariaElena Zammit	
3. Bronze and Iron Age pottery from the 1909 and 1959 excavations at Qlejgħa tal-Baħrija	31
Davide Tanasi	
4. Textile tools and terracotta figurines from Prehistoric Qlejgħa tal-Baħrija	71
Carlo Veca	
5. Stone, metal and bone artefacts from Qlejgħa tal-Baħrija	92
Carlo Veca, Paolo Trapani, Davide Tanasi	
6. Post-Prehistoric pottery from the 1909 and 1959 excavations at Qlejgħa tal-Baħrija	100
Stephan Hassam	

Part II

7. Non-destructive pXRF analysis of Middle Bronze and Iron Age pottery from Malta	109
Davide Tanasi, Robert H. Tykot, Frederick Pirone, Nicholas C. Vella	
8. Baħrija pottery production from an archaeometric perspective	121
Davide Tanasi, Daniele Brunelli, Valentina Cannavò, Sara Tiziana Levi	
9. New data on the absolute chronology of the Maltese Middle/Late Bronze Age	137
Davide Tanasi, Robert H. Tykot	

Part III

10. A critical revision of the Late Borg in-Nadur/Baħrija-type pottery from the Thapsos settlement (Sicily)	143
Davide Tanasi	
11. The Tas-Silg sanctuary between the late 2nd and the early 1st millennia BC	153
Alberto Cazzella, Giulia Recchia	
12. Zooarchaeology of Għar Mirdum. Preliminary Analysis	169
Roberto Micciché	

List of Figures and Tables

Part I

1. D. Cardona: **Il-Qlejgħa tal-Bahrija: the story**

Figure 1. The Qlejgħa tal-Bahrija plateau sits prominently along the western coast of the Maltese Islands	4
Figure 2. Satellite image showing the various features and excavations documented on Qlejgħa tal-Bahrija	5
Figure 3. Plan of the trenches excavated by T. E. Peet in 1909.....	6
Figure 4. Among Trump's first entries on the site is this sketch onto which he was marking the area's main features prior to the excavation.....	8
Figure 5. Trump published the drawing of the northern section of trenches B to D (A), in which the layers are not numbered. It is only through corroboration with the accompanying text and, particularly, the notebooks and sketches, that these can be clearly identified and a Harris Matrix be produced (B)	10
Figure 6. Accompanying Trump's excavation notebook are a number of to-scale drawings that give us direct insight into how the sections actually looked like.....	11
Figure 7. Trump's excavation notebook allows us to reconstruct the northern section of trenches B-D and the actual stratigraphic sequence of the excavation	12
Figure 8. Fragments of a large jar in trench B	13
Figure 9. Among the main artefacts discovered during Trump's excavation is this platter found in the northern extent of trench E. The other platter sketched in his sketch (top left) is not clearly identifiable but may possibly refer to the second hearth documented in trench E	15
Figure 10. Taken across the third metre of trench D, this sketch provides the only plan of Trump's entire excavation. It is accompanied by a note stating that the grey layer 5 was found in pockets extending to the northern 30 cm of the trench only. Beyond this, 1 and 6 meet directly	16
Figure 11. Among the pits studied by Zammit and Cardona are a few preserving an intact rim intended to hold a lid, like the one shown here	17
Table 1. Trump's new numbering system for the layers found within his trenches	9

2. M. E. Zammit: **Il-Qlejgħa tal-Bahrija: an archaeological survey**

Figure 1. Tracts surveyed and sample area from where pottery was collected.....	21
Figure 2. Pottery counted in the survey area, grouped by density	23
Figure 3. Wall built in large masonry found in Tract 35	24
Figure 4. Examples of Ware 1	25
Figure 5. Black on red slip fragment	25
Figure 6. Examples of Ware 2	26
Figure 7. Examples of Ware 3	26
Figure 8. Shallow bowl with a pouch on its interior.....	27
Figure 9. Examples of Ware 4	27
Figure 10. Example of Ware 5.....	28
Table 1. Ware types as classified for the purposes of this exercise (columns 1 and 2)	24

3. D. Tanasi: **Bronze and Iron Age pottery from the 1909 and 1959 excavations at Qlejgħa tal-Bahrija**

Figure 1. Evans' catalogue sheets of B/P2 and B/P 100, digitized by the National Museum of Archaeology	31
Figure 2. Classic Borġ in-Nadur cup 100063 (B/P 108)	32
Figure 3. Borġ in-Nadur cups, a) 100115d; b) 100115e; c) 100115g.....	33
Figure 4. Borġ in-Nadur cup 2720	33
Figure 5. Borġ in-Nadur cups, a) Type 1A 100115d; b) Type 1A 100115e; c) Type 2A 100115g.....	33
Figure 6. Cup 100113.....	33
Figure 7. Cup 100115f.....	33
Figure 8. Borġ in-Nadur of Type 2A, 100115a	33
Figure 9. Borġ in-Nadur dipper cups handles from Peet's excavation, a-b) axe-shaped handle terminations (2737, s.n.); c) catapult handle (100100a)	34
Figure 10. Fragment of Type 1B/1C amphora (1000117)	34
Figure 11. Juglet B/P18.....	34
Figure 12. Tubular spout B/P174	34
Figure 13. Strainer spouted jug B/P178.....	34
Figure 14. Strainer spouted jug from Qlejgħa tal-Bahrija.....	35
Figure 15. Fragments of large storage jars: a) 100090m, b) 100088d, c) 100087b, d) 100087c, e) 100087d, f) 100088a, g) 100088b, h) 100088c.....	35
Figure 16. Lids: a) 100083, b) 4924, c) 100048b, d) 100048a	36
Figure 17. Lids: a) 100083, b) 4924, c) 100048b, d) 100048a	36
Figure 18. Lamp 2751	37

Figure 19. Borġ in-Nadur decorated pottery from Peet's excavation, a-i) incised pottery (100104); j) incised pottery (100098); k-l) pottery with plastic rope bands (100104, 100096).....	37
Figure 20. Borġ in-Nadur pottery from Peet's excavation decorated with plastic pellets, a-b) jug handles 100098g and 100098i; c, g) Dipper cups 100057 and 100116i); d) Cup 100105c; e-f) Jars 100102a and 100102b	38
Figure 21. Borġ in-Nadur pottery from Peet's excavation decorated with impressed motifs, a) 100103; b) B/P206	38
Figure 22. Dipper cup fragment belonging to the Painted Ware class from Qlejgħa tal-Bahrija	38
Figure 23. Fragment of a spouted open vessel belonging to the Painted Ware class (100108)	39
Figure 24. Chief shapes of the Bahrija pottery	39
Figure 25. Cups of Type IA1: a) 100036b, b) 100038b, c) 2720, d) 100038c	40
Figure 26. Cups of Type IA2: a) 100041a, b) 100038j, c) 100041k, d) 100040a, e) 100036f, f) 100038m, g) 100036e	40
Figure 27. Cups of Type IB1: a) 100043d, b) 100040m, c) 2709	41
Figure 28. Cups of Type IB2: a) 100041h, b) 2662, c) 100042d	41
Figure 29. Cups of Type II: a) 100041d, b) 100038g	41
Figure 30. Cup of Type IIIA: a) 100043c, b) 100042l, c) 100042k	41
Figure 31. Cups of Type IIIB1: a) 100037a, b) 100040b, c) 100038e	42
Figure 32. Cup of Type IIIB2: 100040c	42
Figure 33. Cup of Type IV: 100042j	42
Figure 34. Miniature cup 2716	42
Figure 35. Miniature cup 100049	42
Figure 36. Miniature cup 4903	42
Figure 37. Miniature cup 4908	42
Figure 38. Miniature cup 100042b	43
Figure 39. Grey Ware cups a-g) 10061a-g, h) 10061j	43
Figure 40. Grey Ware cups a) 2748, b) B/P101a, c) B B/P101b, d) B B/P101c	43
Figure 41. Grey Ware cups: a-g) 100061a-g, h) 100061j, i) 2748	44
Figure 42. a) Grey Ware conical pedestals: a-c) 100116a-c, d-h) 100116e-i; i) embossed base 100060c	44
Figure 43. Grey Ware conical pedestals: a-c) 100116a-c, d-h) 100116e-i	45
Figure 44. Basin of Type I: 2722	45
Figure 45. Basin of Type II: 100043b	45
Figure 46. Basin of Type III: a) 100043e, b) 100043b	46
Figure 47. Basin of Type IV: 100042l	46
Figure 48. Dipper cups of Type IA1: a) 2746, b) 2745, c) 100031g, d) 100034e, e) 100032m, f) 2664, g) 100035b, h) 100030a, i) 100032k, j) 100035e, k) 2758	46
Figure 49. Dipper cups of Type IA2: a) 100035a, b) 100031a, c) 100031b, d) 2752	47
Figure 50. Dipper cups of Type IA1: a) 2746, b) 2745, c) 2758; Type IA2 d) 2752, e) detail of 2752, f) detail of 2746	47
Figure 51. Dipper cups of Type IB1: a) 4901, b) 2661, c) 100032o, d) 100116l, e) 100032i, f) 100032j, g) 100034c, h) 100033f, i) 100032l, j) 100034b, k) 100032a	48
Figure 52. Dipper cups of Type IIA: a) 2756, b) 100033m, c) 100032g, d) 100033d, e) 100033l, f) 100033c, g) B/P30	48
Figure 53. Dipper cups of Type IIB: a) 100035c, b) 100035d, c) 100034c, d) 100034b	49
Figure 54. Dipper cups of Type IIC: a) 100032f, b) 100034l, c) 100032c, d) 100032h, e) 100033k, f) 100032b, g) 100033i, h) 100033j, i) 100033g, j) 100033n	49
Figure 55. Dipper cup of Type III 2763	50
Figure 56. Decorated strap handles of dipper cups: a) 2744, b) 2704, c) 2718, d) 2660, e) 2738, f) 2671, g) 2705, h) 2732	50
Figure 57. Decorated strap handles of dipper cups 100028a-j	50
Figure 58. Decorated strap handles of dipper cups: a) 2735, b) 2703, c) 2736a, d) 2736b	51
Figure 59. Decorated strap handles of dipper cups: a) 2656, b) 2717, c) 2707, d) 2706	51
Figure 60. Bowls: a) 100068, b) 2702, c) B/P50, d) 2723	51
Figure 61. Bowls: a) 100067, b) 2755, c) 2761	51
Figure 62. Bowls: a) B/P64, b) 100086, c) s.n.	52
Figure 63. Fragments of trays 100064a-o	52
Figure 64. Fragments of trays 100064a-o	53
Figure 65. Jars of Type I: a) 100058, b) 100084a	54
Figure 66. Jars of Type II: a) 100039a, b) 1000039b, c) 100039c, d) 100039d, e) 100039e, f) 100039f, g) 100112a, h) 100112b	54
Figure 67. Jugs: a) 2649, b) 2721	55
Figure 68. Jug fragment 100052	55
Figure 69. Jug handles: a-c) 100085a-b-c, d) 100085f	55
Figure 70. Jug handles 100093a-k	55
Figure 71. Trefoil mouthed (?) jug fragment 100053	55
Figure 72. Carinated globular body with embossed base 100060a	55
Figure 73. Cheese-strainer vessels 100051a-c	56
Figure 74. Tokens: a-c) 100095a-c d) no. 15, National Museum of Archaeology, showcase no. 3/15	56
Figure 75. Knobs 1027a, 1027b, 100101 (B/P 184)	56
Figure 76. Terracotta objects: a) 100054, b) 100028	56
Figure 77. Theriomorphic spouts: a) 100055, b) B/P1001	57
Figure 78. Qlejgħa tal-Bahrija, matrix based on Trump's published report	57
Figure 79. Qlejgħa tal-Bahrija, matrix based on Trump's notebook	57
Figure 80. Cup 100120	58
Figure 81. Token 100047	58
Figure 82. Miniature jug 2652	58

Figure 83. Dipper cup 100034l	58
Figure 84. Strainer vessel 1000051d	58
Figure 85. Wall fragment 100056	59
Figure 86. Basin 100038a	59
Figure 87. Bone specimens 100065a-c.....	59
Figure 88. Dipper cup 100031g	59
Figure 89. Painted Ware wall fragment 100109b.....	59
Figure 90. Platter from the layer 5A of the northern extent of trench E.....	60
Figure 91. Examples of 'trays' from settlement at Borg in-Nadur, very likely to be considered floor platters	60
Figure 92. Materials from unknown context of Trump's excavation: a) 100031c, b) 100032d, c) 100032e, d) 100033k, e) 100033g, f) 1000042a.....	60
Figure 93. Dipper cup 100034h.....	60
Figure 94. Main decorative motifs in the fully developed Bahrija pottery repertoire	63
Figure 95. Terracotta model 4916 (BN/74) from Borg in-Nadur temple	65
Figure 96. Bahrija pottery from Borg in-Nadur settlement	65
Figure 97. Bahrija pottery from Tas-Silġ South.....	66
Figure 98. Pottery from Tas-Silġ initially interpreted as Tarxien Cemetery, reconsidered as Bahrija-type.....	66
Figure 99. Bahrija pottery from the Charles Trenchmann Collection at the British Museum, nos. 437-474, 476, 477-480	66
Figure 100. Bahrija pottery from 'Unknown Donors' at the British Museum, nos. 880, 883-886	66
Table 1. Main type of decorative motifs and decorative techniques	61
Table 2. Main ware types and fabrics identified through direct exam among the materials from Peet's and Trump's excavations at Qlejgha tal-Bahrija	64
Table 3. Hypothesized chronology for the sequence Late Borg in-Nadur, Transitional and Mature Bahrija phases	67

4. C. Veca: Textile tools and terracotta figurines from Prehistoric Qlejgha tal-Bahrija

Figure 1a-b. Loom weights: typology and weight	73
Figure 2. Conical loom weights	75
Figure 3. Truncated-conical loom weights	76
Figure 4a-b. Loom weights. 1) Height and weight ratio; 2) Thickness and weight ratio	77
Figure 5. Loom weights, hole perforation and weight ratio.....	77
Figure 6. Pyramidal, Rectangular and Bullet loom weights	78
Figure 7. Spindle whorls: typology and weight.....	79
Figure 8. Conical and Biconical spindle whorls.....	79
Figure 9. Globular and Ovoid spindle whorls.....	81
Figure 10. Spindle whorls. Height and weight ratio.....	81
Figure 11. Spindle whorls. Height and diameter ratio	82
Figure 12. Spindle whorls. Diameter and weight ratio.....	82
Figure 13. Biconical and Globular beads.....	83
Figure 14. Clay anchors from Qlejgha tal-Bahrija	85
Figure 15. Terracotta figurines. a) B/P1001; b) B/P1354.....	86
Figure 16. Terracotta figurines. a) B/P1001; b) B/P1354.....	86
Figure 17. Terracotta items. a) 100006a; b) 100006b; c) 2673; d) 100001l	87
Figure 18. Reconstruction of a vertical loom from Qlejgha tal-Bahrija.....	89
Table 1. Loom weights from Qlejgha tal-Bahrija.....	72
Table 2. Spindle whorls from Qlejgha tal-Bahrija	79
Table 3. Beads from Qlejgha tal-Bahrija	82
Table 4. Clay anchors from Qlejgha tal-Bahrija.....	84
Table 5. Stylistic and technical comparison between the two terracotta heads B/P1001 and B/P1354	85

5. C. Veca, P. Trapani, D. Tanasi: Stone, metal and bone artefacts from Bahrija

Figure 1. Axe pendant and stone tools from Qlejgha tal-Bahrija	93
Figure 2. Stone items illustrated in Peet's report, a) pl. XIV, 34, b) pl. XIV, 39.....	96
Figure 3. Bronze ring 2700 and bronze needle 2701 from Qlejgha tal-Bahrija.....	97
Figure 4. Wall fragment with inserted metal shard 100056 from trench C, Layer 6 of Trump's excavation.....	97
Figure 5. Evans' Museum accession form describing a lump of Bronze recovered at Qlejgha tal-Bahrija in 1918.....	97
Figure 6. Evans' Museum accession form for the bone comb B/B1	98
Figure 7. Evans' Museum accession form for the sharks' teeth B/S7	98
Figure 8. Ausonian II bone combs from Sicily	98
Figure 9. Replication of the decorative motif of the curved hatched line using a fossil shark tooth	98
Table 1. Lithic materials from Peet's excavation studied at the National Museum of Archaeology	92
Table 2. Lithic materials studied by Evans in the 60s at the National Museum of Archaeology	94
Table 3. Lithic materials discussed in Peet's and Trump's reports	96
Table 4. Table of the two metal artefacts tested and the elemental data obtained.....	97

6. S. Hassam: Post-Prehistoric pottery from the 1909 and 1959 excavations at Qlejgha tal-Bahrija

Figure 1. Bases. a) B1; b) B2; c) B3; d) B4.....	101
--	-----

Figure 2. Rims. a) B/P201; b) R1; c) R2	101
Figure 3. Handles. a) H1; b) H2; c) H3; d) H4.....	101
Figure 4. Lamp holder fragments. a) LH1; b) LH2; c) LH3	102
Figure 5. Wall sherds. a) B/P212; b) W1; c) W2; e) W3; e) W4; f) W5; g) W6; h) W7; i) W8; j) W9; k) W10; l) W11; m) W12; n) W13; o) W14; p) W15; q) W16; r) W17; s) W18.....	103
Figure 6. Ras ir-Raheb headland as seen from the Qlejgha tal-Bahrija plateau	105
Figure 7. Lamp holder <i>comparanda</i> . a) Lamp holder from the National Museum of Archaeology, Malta; b) Lamp holder from the National Museum of Archaeology, Malta found in Borġ in-Nadur; c) Lamp Holder from Gozo; d) Lamp holder from private collection	106

Part II

7. D. Tanasi, R. H. Tykot, F. Pirone, N. C. Vella: **Non-destructive pXRF analysis of Middle Bronze and Iron Age pottery from Malta**

Figure 1. a) LH IIIB kylix fragment BN/P from the Double Chapel of the Borġ in-Nadur temple; b) LHIIB/IIIC body fragment of a closed shape from Tas-Silġ South	109
Figure 2. Principal component analysis of the trace elemental composition of all Bahrija ceramics and Maltese clay samples. The majority of the samples clusters together in group A, six prehistoric samples (100064e, 100033n, 100048a, 100055a, 2723, 4924) and three Punic samples (100072d, 100073a, 100073q) cluster in group B and two Punic samples (100074c and 100074d) cluster in group C.. ..	118
Table 1. Trace Elemental Compositions (ppm) for each sample.....	110

8. D. Tanasi, D. Brunelli, V. Cannavò, S. T. Levi: **Bahrija pottery production from an archaeometric perspective**

Figure 1. Petrographic classification of the fabrics, photo through polarizing microscope (PPL and XPL). S1 Fossiliferous optically inactive groundmass, S2a Grog in homogeneous fossiliferous groundmass, S2b Grog in inhomogeneous fossiliferous groundmass, I1 Granite.....	126
Figure 2. Comparison between TiO ₂ wt% measured in Bahrija pottery by XRF and LA-ICP-MS	130
Figure 3. Major, minor and trace elements of the six samples measured by LA-ICP-MS: composition of incompatible elements (a), composition of REE elements (b), composition of transition elements (c).	131
Figure 4. Relationship between shape/function and fabrics	132
Figure 5. Binary diagrams of the fabrics and Malta clays (Barone <i>et al.</i> 2015): SiO ₂ /CaO vs Al ₂ O ₃ /CaO (a) and of SiO ₂ /MgO vs Al ₂ O ₃ /CaO (b)	133
Figure 6. Binary diagrams of this set of samples, and the dataset from Barone <i>et al.</i> (2015): SiO ₂ /CaO vs Al ₂ O ₃ /CaO (a) and of SiO ₂ /MgO vs Al ₂ O ₃ /CaO (b).	133
Figure 7. Principal Component Analyses (PCA) based on major and minor elements of fabrics from Qlejgha tal-Bahrija, Borġ in-Nadur, Borġ in-Nadur type pottery from Ognina and Cannatello and Malta Blue clays. Factor 1 (45.3%) +Zr,+Cr, -CaO, -K ₂ O. Factor 2 (17.5%) +TiO ₂ , +Si ₂ O ₃ , -CaO, -Sr	134
Table 1. List of samples from Qlejgha tal-Bahrija with indication of shape and pottery class grouped according to ware types	123
Table 2. Composition of Bahrija pottery fabrics	125
Table 3. Major elements (wt%) of Bahrija pottery measured by XRF Fluorescence	128
Table 4. Minor and trace elements (ppm) of Bahrija pottery measured by XRF Fluorescence and LA-ICP-MS	129
Table 5. Mean and standard deviation of major, minor and trace elements of the Bahrija fabric groups	130
Table 6. Major, minor and trace elements (ppm) of the samples measured by LA-ICP-MS (100033G, 100051B, 100051C, 100067, 100042D, 100109B)	131
Table 7. Comparison of the fabrics in the present study and other sets of samples.....	132

9. D. Tanasi, R. H. Tykot: **New data on the absolute chronology of the Maltese Middle/Late Bronze Age**

Figure 1. The Borġ in-Nadur settlement	138
Figure 2. Close-up of the central sector of Qlejgha tal-Bahrija with indication in red of Trump's trenches	139
Figure 3. 2-sigma radiocarbon calibration graph for the three samples tested	140
Figure 4. Radiocarbon dates for the Tarxien Cemetery period	140
Table 1. List of the samples submitted to radiocarbon dating.....	139
Table 2. AMS radiocarbon dating results for samples 100121, 100122, 100065A.....	139

10. D. Tanasi: **A critical revision of the Late Borġ in-Nadur/Bahrija-type pottery from the Thapsos settlement (Sicily)**

Figure 1. Plan of Thapsos' residential district (Complex A and B) with indication of the five areas containing traces of occupation in the Final Bronze Age and Maltese-type pottery findings.....	144
Figure 2. Pottery found in the square room South to Complex B, in quadrant XLVII/33	144
Figure 3. Pottery from a room in the southern area of residential district.....	145
Figure 4. Pottery from the rectangular room south-west to hut no. 4, in quadrant XLIX//31	146
Figure 5. Dipper cups from the topsoil in an area South to Complex B	147

Figure 6. Assemblage of pottery from the rectangular room of Complex A, between quadrants LI/30, L/29 and L/30.....	148
Figure 7. Assemblage of pottery from the rectangular room of Complex A, comprised between quadrants LI/30, L/29 and L/30.....	148

Part III

11. A. Cazzella, G. Recchia: **The Tas-Silġ sanctuary between the late 2nd and the early 1st millennia BC**

Figure 1. Tas-Silġ (Malta). General plan of the site showing the areas explored by the Italian Archaeological Mission (excavations 1963-1970 and 2003-2011) and the University of Malta (excavations 1996-2005)	154
Figure 2. Tas-Silġ, Late Borġ in-Nadur pottery from the North side of the site (excavations 2003-2011). 1: pedestalled bowl decorated with little knobs; 2: jar decorated with fine zigzag incisions and small knobs; 3: small cup decorated with little knobs; 4: jar decorated with incised line and small knob	155
Figure 3. Tas-Silġ, Dribbled Ware and Bahrija pottery. 1-2: Dribbled Ware (north side, excavations 2003-2011); 3: bowl with painted band on the rim (North side, excavations 2003-2011); sherd with excised decoration (excavations 1963-1970)	156
Figure 4. Tas-Silġ, north-east side of the site (excavations 2003-2011). General plan of the prehistoric structures with indication of the extension of primary deposition of Late Borġ in-Nadur layers. Lighter shades indicate the suggested reconstruction of some features.....	157
Figure 5. Tas-Silġ, north-east side of the site (excavations 2003-2011). A: Lunar crescent with cuneiform inscription made of agate; B: section C-E showing the stratigraphic position of the agate crescent.....	158
Figure 6. Tas-Silġ. Decorated bone necklace spacer from a Late Borġ in-Nadur layer (North side, excavations 2003-2011)	159
Figure 7. Tas-Silġ, Bahrija pottery and clay anchors. 1-2, 8: bowls with incised and excised decoration (excavations 1963-1970); 3: jar with excised decoration from area O (North side, excavations 2003-2011); 4-5: sherds with excised decoration (South side, excavations 1996-2005 – University of Malta; ns. 2102-2109/3, 2146/6); 6: bowl with excised decoration (North side, excavations 2003-2011); 7: bowl with painted band on the rim (North side, excavations 2003-2011); 9-10: clay anchors from area O (North side, excavations 2003-2011)	162
Figure 8. Tas-Silġ, finds from Bahrija layers in apse IVC (North-east side, excavations 2003-2011). 1: serpentine bronze fibula; 2-3: Plumed Ware.....	163
Figure 9. Tas-Silġ, north-east side of the site (excavations 2003-2011). Plan of the prehistoric structures with indication of the extension of primary deposition of Bahrija layers. Lighter shade indicates the suggested reconstruction of some features.....	164
Figure 10. Tas-Silġ, north-east side of the site (excavations 2003-2011). Primary deposition of Bahrija layers in Apse IVC	165

12. R. Micciché: **Zooarchaeology of Ghar Mirdum. Preliminary Analysis**

Figure 1. Infantile human remains recovered among animal bones coming from Chamber P	170
Figure 2. Relative frequency of identified species at Ghar Mirdum.....	171
Figure 3. Caprovines survivorship curve based on the ontogenic stage	172
Figure 4. Dismembering marks (black arrow) and marrow extracting mark (red arrow) on a proximal caprovine femur	175
Figure 5. Relative frequency of body parts and butchery marks distribution for caprovine taxon at Ghar Mirdum	175
Figure 6. Lateral view of the sternum of the domestic fowl (<i>Gallus gallus domesticus</i>) discovered in chamber M/N	176
Figure 7. Relative abundances of main taxa for the sites of Ghar Mirdum and Borġ in-Nadur	176
Table 1. Ghar Mirdum faunal assemblage count (number of specimens).....	170
Table 2. Ghar Mirdum faunal assemblage count (weight in grams of specimens)	171
Table 3. Measurements of bones from Ghar Mirdum.....	172

Introduction

Davide Tanasi, David Cardona

The period between the mid-2nd millennium BC and the arrival of the Phoenician colonists in the Maltese Archipelago, around the late 8th c. BC, is one of the most fascinating of the Maltese prehistory. Distant in time from the majesty of the Megalithic Temples and the aura of the Punic Temples of Melqart and Astarte, this timeframe has been, for a long time, the lesser known and investigated. This, together with the poor preservation of its monuments, has contributed to its fame as one of the most enigmatic phases of Maltese archaeology.

Over the last 110 years, several major scholars of Maltese archaeology challenged themselves with excavations and studies to shed light on possible corresponding Mediterranean chronologies to Malta's Middle/Late Bronze and Iron Age. T. E. Peet, M. A. Murray, J. D. Evans and D. H. Trump worked at and wrote about the sites of Borġ in-Nadur (in Marsaxlokk Bay) and Qlejġha tal-Baħrija (on the outskirts of Rabat and Had Dingli), the key sites for this period, mostly using the ceramic data to sketch up a chrono-typological sequence in order to give an order to the multifaceted evolution of this part of Maltese prehistory. Without the support of the amazing tools that archaeometry now offers and at times even without the comfort of stratigraphic excavation methods, those scholars laid down the foundations of many recent studies, producing a pioneering scientific literature.

What is most striking in that literature, though, is the use of terms as 'culture', 'phase', 'period', 'facies', 'pottery phase' and 'pottery style' often coupled with the adjective 'cultural' in the meaning of what appears as a culture to us. A plurality of terms that may at times hide uncertainty and lack of clarity and which now makes it difficult for authors of recent studies to reconcile modern hypotheses with those of their illustrious predecessors.

The advances of research methodologies have pointed out a certain awareness of the discrepancy between archaeological evidence and the essence of a fully operating ancient culture. Due to the destructive action of several different factors over centuries, any attempts of defining a culture or a facies always produces a partial picture of a historical reality which is impossible to properly reconstruct (Cocchi Genick 2005, pp. 5-6). In other words, the subordination of our analysis to the

randomness of the archaeological sources, conditioned by many natural and historical factors taking place between past and present, often cause erroneous interpretation of certain 'cultures'. In this perspective, some Italian scholars suggest the term 'archaeological facies' as more appropriate than 'culture' for the definition of these phenomena (Cocchi Genick 2005, p. 6). According to R. Peroni, an archaeological facies is 'a layout resulting from the casual combination of data related to some aspects of the material culture, as they appear from the archaeological evidence and it is the outcome of a certain transmission and circulation process of the information and it is definable through the study of geographic distribution of the artefacts' (Peroni 1998, p. 10). Endorsing this vision and trying to apply it to this last stage of Maltese prehistory, the terms 'culture' and 'cultural' should, in our opinion, be used just in reference to Borġ in-Nadur, as the main product of the Maltese indigenous communities throughout the Middle/Late Bronze and Iron Age, while the term 'period' will be used to indicate those internal chronological stages characterized by specific pottery productions, identifiable on the basis of typological and stylistic indicators, as for example the Baħrija period.

The Borġ in-Nadur culture and the Baħrija period are actually the subject of *The Maltese Archipelago at the Dawn of History*, the last volume of a trilogy, that represents the logical continuation of a long term research project aimed at the reassessment of the material culture of the Maltese Middle/Late Bronze and Iron Age through the analysis of legacy data left by the excavations carried out in the first half of the 20th century in the key sites of Borġ in-Nadur and Qlejġha tal-Baħrija. The first two books (D. Tanasi, N.C. Vella (eds), *Site, artefacts, landscape: prehistoric Borġ in-Nadur, Malta*, Oxford: Archaeopress Open Access 2011; D. Tanasi, N.C. Vella (eds), *The late prehistory of Malta: essays on Borġ in-Nadur and other sites*, Oxford: Archaeopress 2015) revolved around the site of Borġ in-Nadur and the period characterized by the production and circulation of Borġ in-Nadur pottery. The interdisciplinary and collaborative approach behind the research for those two volumes bore groundbreaking results and shed light on one of the most enigmatic moments of Maltese prehistory. But while that research focused primarily on the cultures between the mid-15th and mid-13th c. BC, not much about the dynamics in place from the mid-13th to the beginning of the Phoenician occupation

toward the end of the 8th c. BC was discussed, as in fact the evidence summarizing that period was better represented by the site of Qlejgha tal-Bahrija rather than Borġ in-Nadur.

In this perspective, the reappraisal of the excavations carried out at Qlejgha tal-Bahrija by T. E. Peet in 1909 (Peet 1910) and D. H. Trump in 1959 (Trump 1961) – both of which only preliminary published – and the critical study of the Bahrija period using the methodology devised and put in place for Borġ in-Nadur, became imperative and, at the same time, the logical conclusion of almost a decade of research on Maltese prehistory. Like the other two companions, this book is published thanks to a generous grant from the Shelby White – Leon Levy Foundation of Harvard University (Program for Archaeological Publications), received by one of us (DT) in 2017.

The volume is organized in parts. Part I comprises 6 chapters: chapter 1 deals with the history of the archaeological research at Qlejgha tal-Bahrija (Cardona); chapter 2 details the most recent fieldwork at the site of Qlejgha tal-Bahrija (Zammit); chapter 3 focuses on the critical reassessment of all the ceramic materials from the 1909 and 1959 excavations (Tanasi); chapter 4 takes into consideration textile tools and coroplastic from the 1909 and 1959 excavations (Veca); chapter 5 deals with stone, metal and bone artefacts from Qlejgha tal-Bahrija (Veca, Trapani and Tanasi); chapter 6 delves into the study of the post-prehistoric materials from the 1909 and 1959 excavations (Hassam). Part II includes three chapters representing the archaeometric dimension of the research project: chapter 7 focuses on the non-destructive chemical characterization of an array of Bronze/Iron Age pottery from various Maltese sites (Tanasi, Tykot, Pirone and Vella); chapter 8 is a thorough petrographic and chemical study of the Bahrija pottery (Tanasi, Brunelli, Cannavò, Levi); chapter 9 presents the first innovative radiocarbon dates for the Maltese Middle/Late Bronze and Iron Age (Tanasi and Tykot). All cultural materials discussed in Part I and II are kept at the National Museum of Archaeology at Valletta (Malta). Part III comprises three chapters of other aspects strictly connected with the Maltese Middle/Late Bronze and Iron Age: chapter 10 discusses the Bahrija-type pottery found at the Thapsos settlement in Sicily (Tanasi); chapter 11 presents new critical evidence about the major site of Tas-Silg sanctuary during the Bahrija period (Cazzella and Recchia); chapter 12 deals with an extensive zooarchaeological study of the Middle/Late Bronze Age cave site of Għar Mirdum (Miccichè).

The Maltese Archipelago at the Dawn of History has proved once again the enormous value of the legacy excavation data, especially in a context with limited new or ongoing excavation projects targeting the Middle/Late Bronze

and Iron Age. The collaborative and interdisciplinary approach, true *leitmotiv* of all the three books, supported by innovative archaeometric methods, has brought a cache of new data for other scholars to use for attempting historical reconstructions of such crucial ages and prepared the ground for a long waited and much needed plan of new excavations at Borġ in-Nadur and Qlejgha tal-Bahrija. The storage rooms of the Auberge de Provence, where the National Museum of Archaeology is located in Valletta have, in our opinion, given everything they had to offer. The time is ripe to return to the small fort in the North – the meaning of Qlejgha tal-Bahrija as given by Wettinger – (Wettinger 2000, pp. 14, 442) to pick up where the founding figures of Maltese prehistory stopped many decades ago. That is the main recommendation for future works we have, at this stage, to offer.

We are, indeed, very grateful to Sharon Sultana (Senior Curator of the National Museum of Archaeology) who permitted the study and facilitated the access to the various researchers involved in the project between 2017 and 2018, and to Anthony Pace, then Superintendent of Cultural Heritage, for the authorization to undertake archaeometric analysis on ceramics artefacts and bone specimens. The technical drawings of the materials were carried out by Stephan Hassam and David Cardona and digitally improved by Gianpiero Caso and Paolo Trapani. A sincere thanks also needs to be given to Mariella Musumeci (Director of the Regional Archaeological Museum 'Paolo Orsi' of Siracusa) for authorizing the study of the Maltese-type pottery from the Thapsos settlement and to Anita Crispino (Executive) for having facilitated the study. The drawings of the Maltese-type ceramics from Thapsos are credited to Rita Musumeci.

Last but not the least, we dedicate this volume to our life partners, Denise and Mireille, who selflessly supported us in the years of this project.

References

- Cocchi Genick, D. 2005. Considerazioni sull'uso del termine 'facies' e sulla definizione delle facies archeologiche, *Rivista di Scienze Preistoriche* 55, pp. 5-27.
- Peet, T. E. 1910. Contributions to the Study of the Prehistoric Period in Malta, *Papers of the British School at Rome*, Vol. V, 1910, pp. 141-163.
- Peroni, R. 1998. Classificazione tipologica, seriazione cronologica, distribuzione geografica, *Aquileia Nostra* 69, pp. 10-27.
- Trump, D. H. 1961. The Later Prehistory of Malta, *Proceedings of the Prehistoric Society for 1961*, Vol. XXVII, December 1961, pp. 253-262.
- Wettinger, G. 2000. *Place-Names of the Maltese Islands: c. 1300-1800*, PEG publishers, San Ġwann.

Chapter 1.

Il-Qlejgħa tal-Baħrija: the story

David Cardona

1. Introduction

Il-Qlejgħa tal-Baħrija is an Upper Coralline Limestone plateau in the West coast of Malta. It is flanked on the eastern side by some of the most fertile land in the area, with the Baħrija Valley providing both productive soil and a perennial spring of natural water. The rest of the land also contains soil of varying depths but the northern and western flanks are considerably unsheltered, particularly against winds blowing in an easterly and south-easterly direction, thus making them only suitable for particularly resistant crops. Il-Qlejgħa tal-Baħrija is likewise exposed to the elements but the plateau's easterly tilt may have provided some form of slight shelter along the eastern edges. Nevertheless, the area has attracted the attention of human activity since the Maltese Bronze Age, when a village was erected on the plateau, making the most of the natural defensive nature of this high ground. The site may have also been used in the subsequent Phoenician, Punic and Roman cultures, but the only evidence for these remain the few sherds of pottery recorded on the plateau and the remains of a structure – possibly a temple – on the nearby Ras ir-Raheb promontory (Figure 1). No remains of Roman or earlier farmsteads seem to have ever been recorded here.

The area has also attracted the attention of various scholars, with two excavations intended to investigate a section of the Bronze Age village and other features around it. The aim of this paper is not to discuss and study particular types of artefacts from any of these excavations. These will be dealt with elsewhere in this publication. On the contrary, this research will go through past studies of the site to draw an outline of what has been published and what has not, trying to extract new data from the documentary sources that these past excavations have left behind. The focus will thus be to provide a detailed outline of past and modern on-site studies and attempt to assess the available data, lacunae and, consequently, provide direction for future investigations of the site.

2. Peet – First Research

The first proper research project on the site was carried out by T. Eric Peet in 1909 after farmers in the area

were reported to have found fragments of an unknown pottery type. Unfortunately though, no records of this excavation remain except for a report published in 1910. Valuable excavation data, drawings and sketches are missing, meaning that any analysis of Peet's excavation have to rely solely on his publication.

Luckily, his work is detailed enough to allow us to create a timeline of how his excavations unfolded. Peet decided to put his series of trenches in a field located roughly in the centre of the eastern side of the plateau (Figure 2).

We are not given many details as to why he chose this particular field other than that it was an empty field, leaving the open question of whether that meant that the field was unoccupied or empty of crops. The presence of agricultural produce, or lack thereof, may have played a major role in the selection of the area to be excavated. One may have expected a higher degree of sherds and depth of soil to be deciding factors in favour of this field but the omission of both in his report seem to implicate that these were probably not considered by Peet. He does, however, give a description of the field in which we are told that the terraced field did have soil cover, but that it was very thin at the western, upper end of the field, where bedrock was virtually at the surface, while it reached a depth of 1.5 metres at the eastern end (Peet 1910, pp. 149-150).

Peet's first trench was called A (Figures 2 and 3). It was 1 metre wide and its excavation started from the west end, where the circular opening of a rock-cut pit was discovered. There is no record of whether this pit was excavated or not but we are told that it was similar to other pits found in a walled enclosure in the same field (Figure 2). Whether the pit was excavated or not, he identifies it as possibly Phoenician in date, although it is uncertain what he based this on (Peet 1910, p. 150). The stratigraphy in the western portion of the trench was very simple and seems to have mainly consisted of the surface plough soil (layer 1).¹ Only once the depth of the soil reached 40 cm did a layer of grey earth start

¹ Peet does not number his layers. For consistency, all layers are here being numbered using the numbering system used during D. Trump's excavations.

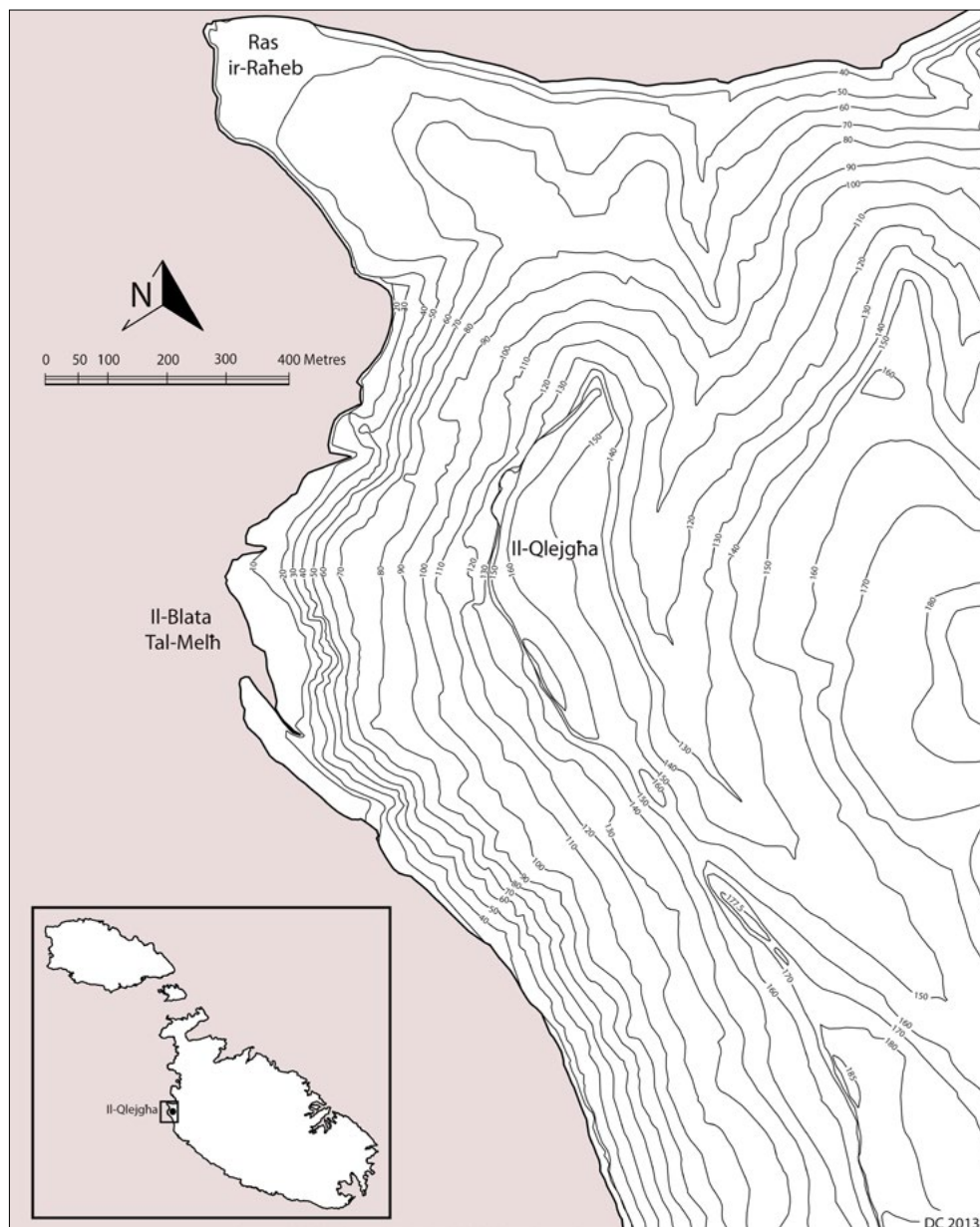


Figure 1. The Qlejgha tal-Bahrija plateau sits prominently along the western coast of the Maltese Islands.

to appear (layer 5). This layer is evidently the main cultural layer of the site with numerous sherds, animal bones and other cultural material recorded in it, albeit without much detail being given in the report Peet 1910, pp. 155-1). This grey layer continued all the way to the eastern boundary wall with apparent ever-increasing thickness, which comes at no surprise given the lie of the land. As previously stated, the whole plateau is lower along the eastern edge. (Figure 1) Soil cover thus naturally tends to run-off towards this lower end, becoming thicker whenever it finds a barrier, like the rubble wall that created the terraced field in which the trench was dug. This means that the cultural material itself is probably in its accumulated state rather than in the exact position where it was laid. It is, however, considerably difficult to ascertain this without direct access to the excavation data, particularly section drawings.

Peet's report does, in fact, record that the main layers all became thicker towards the East, thus implying a progressive decrease in the bedrock's level. The only exception appears to be a thin layer of red, sterile and possibly natural soil (layer 7) sandwiched between the grey layer and bedrock. He does, however, record a sudden dip in the natural rock 3 metres away from the eastern boundary wall, where the rock fell from 70 to 145 cm (Peet 1910, p. 151). The abrupt decrease in rock level, led Peet to open a right-angle extension to the trench (extension L – Figure 3) which proved this to be a natural depression filled with layer 5 (Peet 1910, p. 151).

A similar dip in the rock 10 metres away from the western end of the trench led the excavation to another extension of trench A (extension M – Figure 3). Here, the removal of the overlying soils uncovered a pocket of rock filled with the same grey deposit containing a large

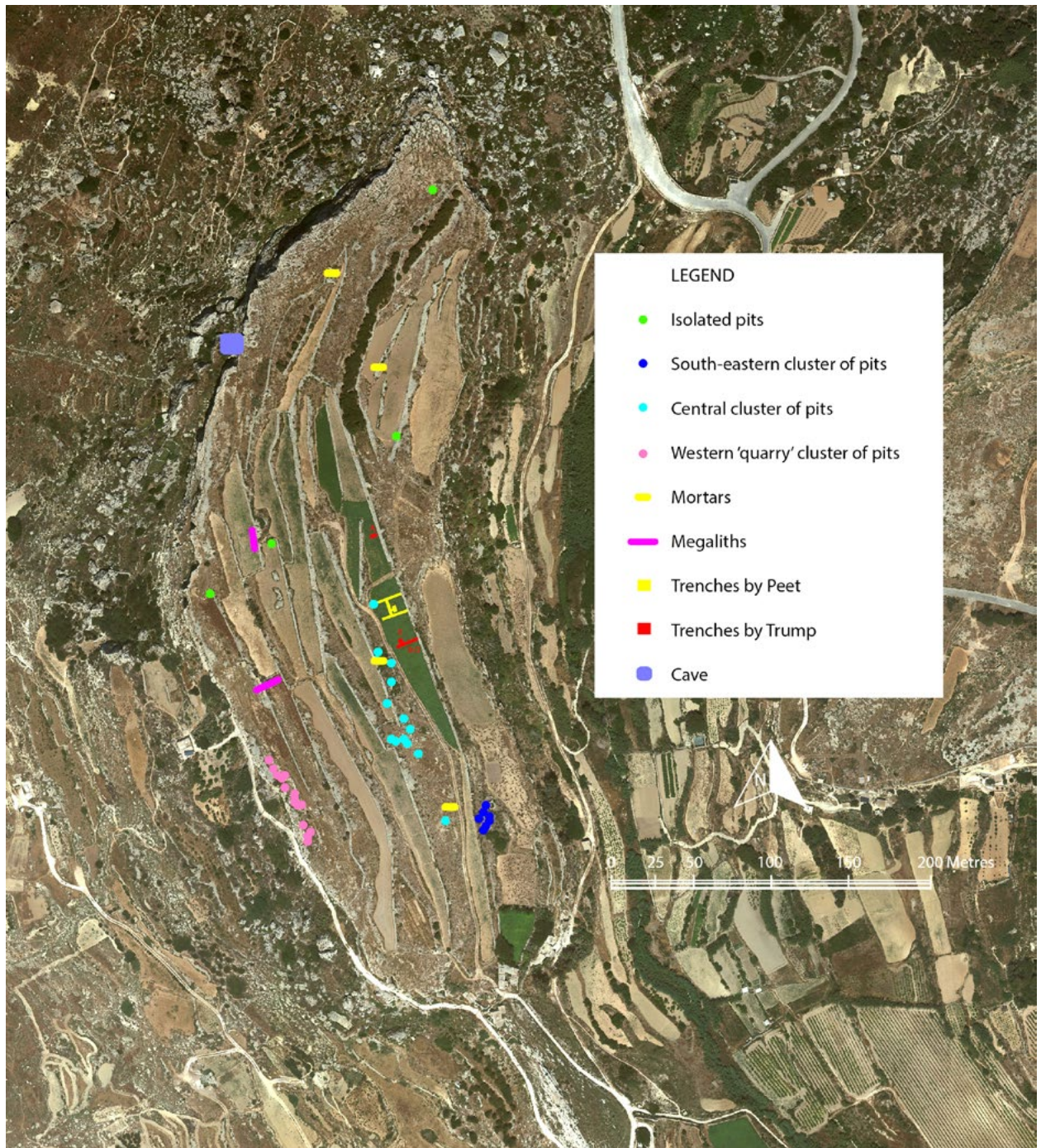


Figure 2. Satellite image showing the various features and excavations documented on Qlejgha tal-Bahrija.

quantity of bones. Sitting above this layer were 'masses' of sun-baked clay with imprints of reeds on one side. These led Peet to identify this feature as the remains of a hut constructed mainly of wattle-and-daub coated in clay and using this dip in the bedrock as the lower part of its walls (Peet 1910, p. 151). A similar situation would be found decades later in two huts excavated in Ġhajnsielem and datable to the Temple Period (particularly between the Ġgantija and Tarxien Phases) Malone *et al.* 2009, pp. 42-56). The only difference is

that, whereas at Ġhajnsielem the dip in bedrock was clearly manmade (Malone *et al.* 2009, pp. 43-49), we have no information if the dip in bedrock at Bahrija was natural or manmade. Peet does say that the hut could be traced across trench A and some distance into B but we are not told through what he could trace it and it is not marked in the plan he published. The dip in the rock is, in fact, only drawn within the confines of extension M and nothing in the plan indicates the continuation of the dip, walls or floor of the said hut (Peet 1910, p. 150).

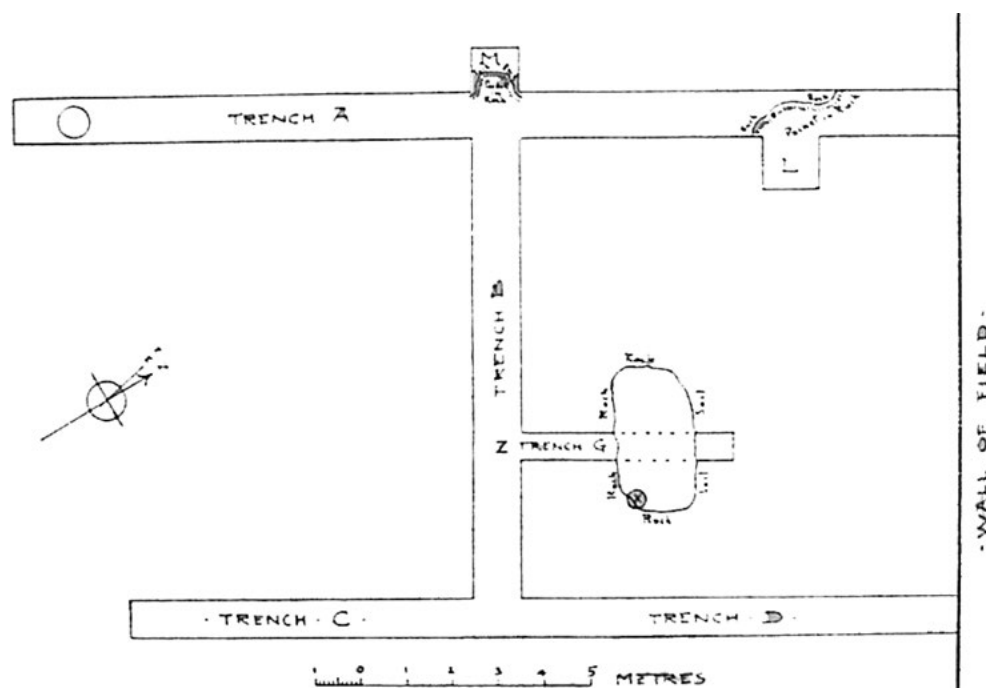


Figure 3. Plan of the trenches excavated by T. E. Peet in 1909. (after Peet 1910, p. 150).

Trench B was opened up at the same time and directly opposite to extension M (Figure 3). The grey, cultural layer continued throughout this trench as well, becoming more prolific the more the excavation progressed. A circular pit 40 cm in diameter and approximately 35 cm deep was found just after 1 metre of excavation from trench A. Peet recalls that its regular form suggested to him that this was man-made. It did, however, only contain the natural red soil with a few bones and pottery sherds, which he interpreted as infiltrations from layers 1 and 5. It could have, in actual fact, been both a naturally formed depression as well as a man-made pit, although its size may be too large for a posthole. Two fragments from rough stone basins were found just beyond this pit. These are compared to the basin at Kordin but we are given no indication if these were in direct association with the nearby pit, nearby features or layers (Peet 1910, p. 151).

At about 7 metres away from trench A, Peet records what he calls 'point Z', where he documents the discovery of three pottery spindle whorls and a fragment of well fired clay brick with a large portion including quartz fragments (Peet 1910, p. 151). This conglomeration of finds led Peet to open up trench G perpendicular to trench B (Figure 3). We are told that the first 2 metres of this trench contained the stratigraphy encountered elsewhere during his excavation (layers 1, 5 and 7). It was after this point that the trench got more interesting, with the discovery of a *torba* floor at a depth of 75 cm beneath layer 5. The trench was at this point expanded to follow the floor, forming a rectangle measuring 3.4 x 1.7 m. As Peet describes it, this *torba* layer fit within the confines of a low ledge of rock on three sides and was banked by soil on its lower edge. The grey cultural layer

was apparently discovered above the *torba* without any break. The only exception was a circular heap of whitish grey earth (approximately 40 cm in diameter and 25 cm high) but no explanation could be given by Peet about this and we are in no better position to formulate an interpretation of our own with the information provided. He did, however, feel confident enough to say that the *torba* floor did not seem to have been laid as the floor of a hut but to level out a dip in bedrock – although the possibility of a large hut or series of smaller huts on the platform is not excluded (Peet 1910, pp. 152-3).

Trench B was excavated to a total length of 10 m, at which point the excavation progressed along two trenches dug at right angles from B (Figure 3). Trench C was excavated up towards the highest end of the field, while D was dug down towards the lower terrace wall, thus forming an H when combined with the other trenches. Layer 5 seems to have tapered out almost immediately within C, something which comes as no surprise when one considers the runoff cumulative process mentioned above. Peet did, in fact, record that the same layer thinned out in trench B immediately after point Z. This layer did, also expectedly, continue all the way down to the wall within D. No particular features were recorded here, apart from the discovery of parts of a large jar (Peet 1910, pp. 151-2).

Peet also provides a list of artefacts recovered during his excavations (Peet 1910, pp. 153-162). As discussed before, this is not the place to describe and study the artefacts in detail as this is done elsewhere in this publication. There are, however, some considerations to make. First among these is the fact that Peet gives a list of artefacts by type, giving no reference to the area

or layer where each was found. One is to assume that all were discovered within layer 5, given that most of the others appear to have been almost devoid of cultural material. The only exception are the animal bones, which he clearly associated with this layer. Secondly, the variety of materials listed, whether given stratigraphic association or not, provides inconclusive evidence of the presence of the intense use of the area. It is true that the remains of floors uncovered during Peet's excavations cannot be conclusively associated with huts, but this comes as no surprise given the limited area of excavation. The various fragments of clay and brick used in wattle-and-daub walled huts, as well as the numerous artefacts usually associated with habitation layers, do not leave any doubt about the presence of at least a small village here (Peet 1910, p. 154).

One type of artefact that appears to be missing in the list are fragments of metal – something that Peet himself complains about. He was also uncertain about the date to be ascribed to the remains uncovered. Peet notes that the pottery shapes were more advanced than those found at *Haġar Qim*, *Kordin* and *Hal Saflieni*. Thus, he concluded that the remains at *Qlejgħa tal-Bahrija* must have been later than the sites mentioned or, if contemporary, must have been more sophisticated (Peet 1910, pp. 161-2). Numerous similarities are also mentioned between features on pottery from *Bahrija* and on numerous fragments found at *Hal Saflieni*, which made Peet think of the two sites as contemporary, with *Bahrija* made up of a colony of immigrants different from that of the people that built the megalithic monuments (Peet 1910, p. 163).

3. Trump – A more modern re-evaluation

David Trump was drawn to the site in the very late 1950s as part of his various archaeological investigations across the Maltese Islands. His excavation and numerous visits to the site were recorded in two handwritten notebooks as well as in reports published in the *Museums Annual Report* (MAR 1959/60, pp. 4-5) and his official excavation report in 1961 (Trump 1961, pp. 253-262).

Trump's first entry about *Bahrija* is dated to 16/11/1958, when he records a thick sherd scatter (Trump 'Field Notes', p. 1 and opposite page). Unfortunately, no reference is given as to where this scatter was.

One of the features marked by Trump in the sketch is a cave in the north-western cliffs of the promontory. This cave is said to have been discovered by Commander and Mrs A. Woolner in 1956 (Trump 1961, p. 258; MAR 1959/60, p. 5). Trump's first visit to the cave was on 18/7/1959, when he described the cave as opening into a '*wide and convenient terrace*' (Trump 'Field Notes', p. 4). Nothing was noted on the surface inside the cave but numerous IIB/C sherds were recorded on the terrace.

This, and the relative isolation of the cave led Trump to excavate two trenches, hoping that the cave had not been recently disturbed (Trump 'Field Notes', p. 4; MAR 1959/60, p. 5). From these two trenches, Trump derived pottery from most periods, which he interprets as the result of run-off material from the cliff above rather than direct habitation in the natural cave (Trump 1961, p. 258; MAR 1959/60, p. 5). One vessel of coarse red material with a 'buffish' surface was, however, highlighted as the only item discarded in situ and thus showing that the cave was visited (MAR 1959/60, p. 5). Very little detail is, unfortunately, provided on the location and stratigraphy of the two trenches and what we can gather is obtained from Trump's notebook in which he records the excavation of a small pit behind a large block at the south end of the cave.² This is also accompanied by basic information of the stratigraphy with ash encountered at a depth of 25 cm, 'a?IIB' sherds at 30 cm and '2?IC' at 50 cm (Trump 'Field Notes', p. 4).

From his notes we also gather information on preliminary visits prior to the excavations of the main trenches in October 1959. We know of at least three visits to the site. The first two have already been mentioned (16/11/1958 and 18/7/1959) with numerous scatters of pottery recorded on both occasions (Trump 'Field Notes', pp. 1 and 4).

A third visit was recorded on 4/8/1959, when he mentions many 'cisterns on the inland side near the base of the promontory'. The information provided in the notebook is minimal and is limited to mentioning the interconnectivity of some, the presence of rebates intended to hold the covers in some of them and the plastered walls still visible in most (Trump 'Field Notes', p. 4). The same pits are also mentioned in Trump's excavation report but the information provided is even less – giving the average of the depth and width of 3 x 3 m (Trump 1961, p. 257). On this last visit before the excavations, Trump was evidently going around the entire *Qlejgħa* and recording its main features as he did so (Figure 4). He also records being shown two mortars and half a quern but it is not exactly clear what he means by 'being shown.' The sketch compiled seems to imply that he was being shown features and elements known by the tenants of the fields (Trump 'Field Notes', p. 4).

In Trump's own words, the main excavations on top of *Qlejgħa Hill* were intended to clarify dating issues that had emerged during his excavations at *Borġ in-Nadur*, where his research had suggested a later date for type IIB pottery (*Borġ in-Nadur*) (MAR 1959/60, p. 4).

² The excavation of this pit is recorded in the notebook under the date 18/7/1959, not February as stated elsewhere. It is thus not clear whether this refers to one of the two trenches or a completely separate trench.

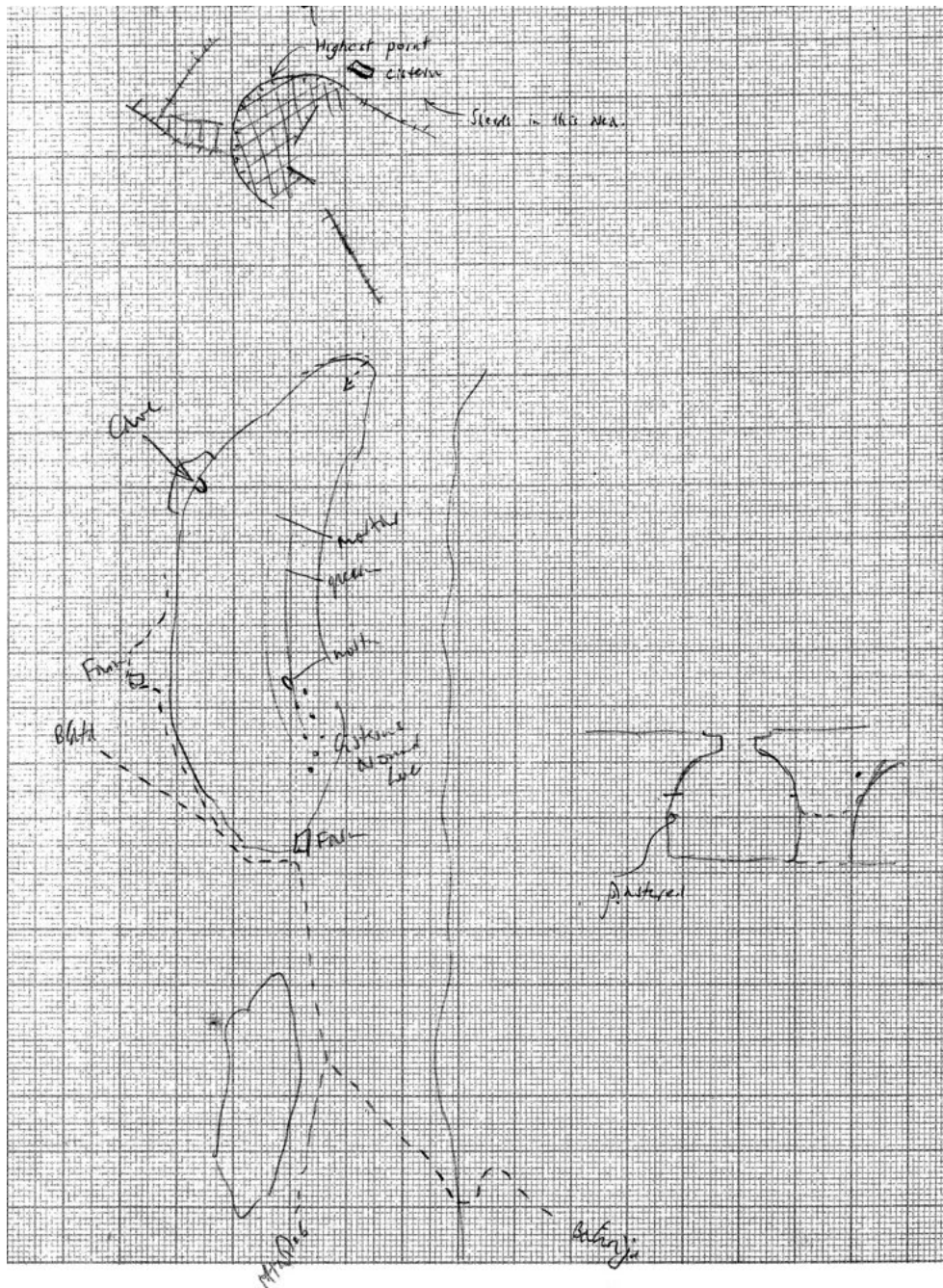


Figure 4. Among Trump's first entries on the site is this sketch onto which he was marking the area's main features prior to the excavation. (After Trump 'Field Notes', p. 4).

Excavation of Trump's five trenches started on the 12th of October in the same field explored by Peet less than 50 years before (Trump 1961, p. 258; Trump 'Notebook I', p. 24). (Figure 2) Trench A, a rectangular pit measuring 5 x 1.5 m, was the first to be opened along an east-west orientation in the extreme North corner of the field. It was located 8 m. from the wall at the end (the northern wall?), just 80 cm. from the lower (eastern) terrace wall, and 4 m. away from the upper (western) field wall (Trump 'Notebook I', p. 24). Although we are not told so, this trench was evidently meant to identify the northern extent of the site but is recorded in the MAR to have only contained plough soil down to the bedrock (MAR 1959/60, p. 4). The excavation did, however, provide a slightly more complex stratigraphy made of:

- Recent plough soil which had been mechanically ploughed only a few weeks before the excavation. The sherds found in this layer were not kept.
- Old plough soil with a similar composition to the one above it but not recently ploughed. It contained type IIB (Borğ in-Nadur phase), IIC (Bahrija phase) and III (Phoenician) pottery but we are not told if these were kept or discarded.
- Harder and darker soil with white specks which Trump identified as agricultural in origin. It contained very small and worn sherds of the same types found in the layer above, but also contained two or three sherds of green glazed pottery.

- Red-brown and compact layer (described as hard), lying over and filling irregularities in the bed rock, which Trump identified as natural in origin. The few IIB sherds found within it have been interpreted as intrusions.
- The irregular natural surface of the Coralline Limestone (Trump 'Notebook I', p. 24).

Trench A appears to confirm that the cultural layers did not extend that far North. This trench is, in fact, only given a brief mention in the preliminary report published in the MAR (1959/60, p. 4) and has been completely omitted in Trump's 1961 report.

The main area of Trump's excavation consisted of three contiguous trenches (B-E) each measuring 5 x 1.5 m (Figure 2). The first (B) was opened behind the eastern terrace of the field and approximately 70 m South of trench A, with the other two subsequently opened to the West of each other (Trump 'Notebook I', pp. 24-25; MAR 1959/60, p. 5). Trench E was the last to be opened as an extension to the combined trench. It measured 2 x 4 m with a 1 m overlap with trenches C and D and extending N therefrom (Figure 7) (Trump 'Notebook I', p. 26; MAR 1959/60, p. 5).

Trump initially used a different numbering system for the stratigraphy within the separate trenches (A1, C1 etc.), but he then naturally combined everything into a single system through which the stratigraphy of all the trenches could be identified. He summarizes the stratigraphy in the following table in his excavation notebook, from which he later formed the basis of the stratigraphy he published (Table 1).

Although in the final publications the stratigraphy is described as very simple, the situation below the modern plough materials is a bit more complicated, with noticeable discrepancies between the stratigraphy mentioned in the notebooks and reports. The excavation's final reports describe a basic stratigraphy made of three main periods sandwiched between a sterile clay at the bottom (7?) and modern plough soil

(1) – all of which are not always clearly identifiable in the only published, unlabelled, section (Figure 5A) (MAR 1959/60, p. 5; Trump 1961, pp. 256, 258). The complications with the stratigraphy mainly arise from a number of factors:

- Differences in the section drawings within the excavation notebook and the one published in the report;
- The use of different numbers for the same units across the different trenches;
- The fact that in the published section one can identify 7 distinct layers rather than the 5 mentioned by Trump.

To try and understand better, let us first have a look at the three layers described by Trump in his published reports. The layer immediately below the modern field surface (1) was a layer of old plough soil (1A) trapped behind the terrace wall within trenches B and C – evidently the result of agricultural land that had been left to erode before the present surface soil was spread across the field (Figure 5) (Trump 'Notebook I', pp. 24, 25). It is not always easy to date soils and layers that have been constantly moved by tilling, but the discovery of sherds from the Roman and Arab periods led Trump to the conclusion that the terraces created on the Qlejgha hill could not be earlier than the Arab Period (MAR 1959/60, p. 5; Trump 'Notebook I', p. 27; Trump 1961, p. 258). It remains, however, unclear how he came to this conclusion. Pottery alone is not a fool-proof indicator and the section drawing he publishes does not show a foundation trench for the said wall built for the creation of this field. It is thus not clear which of the layers found here abutted or were cut by the terrace wall.

The second layer is described as a thick grey layer full of cultural material. It was overlain by layer 2 in the eastern half and by the modern plough (1) along the western half. This is the main layer of the site, also described by Peet and from which most artefacts were obtained. Most importantly, recorded from this layer was a mixture of both Borġ in-Nadur and Baħrija wares,

New numbering and Labelling		A	B	C	D	E
1	Recent plough	1	1	1	1	1
1a	Old plough	2, 3	2	1a	-	-
2	Stony plough	-	3	-	-	-
3	Yellow clayey	-	4 (old 2a)	[3]	-	-
4	Remains of <i>torba</i> floor	-	5	[4]	-	-
5	Grey habitation, soft	-	5	2	2	2
5a	Grey habitation, hard	-	-	2a	2a	2a
6	Orange	-	-	5	3	3
7	Sterile red	4	6	6	4	4

Table 1. Trump's new numbering system for the layers found within his trenches (Trump 'Notebook I', p. 27).

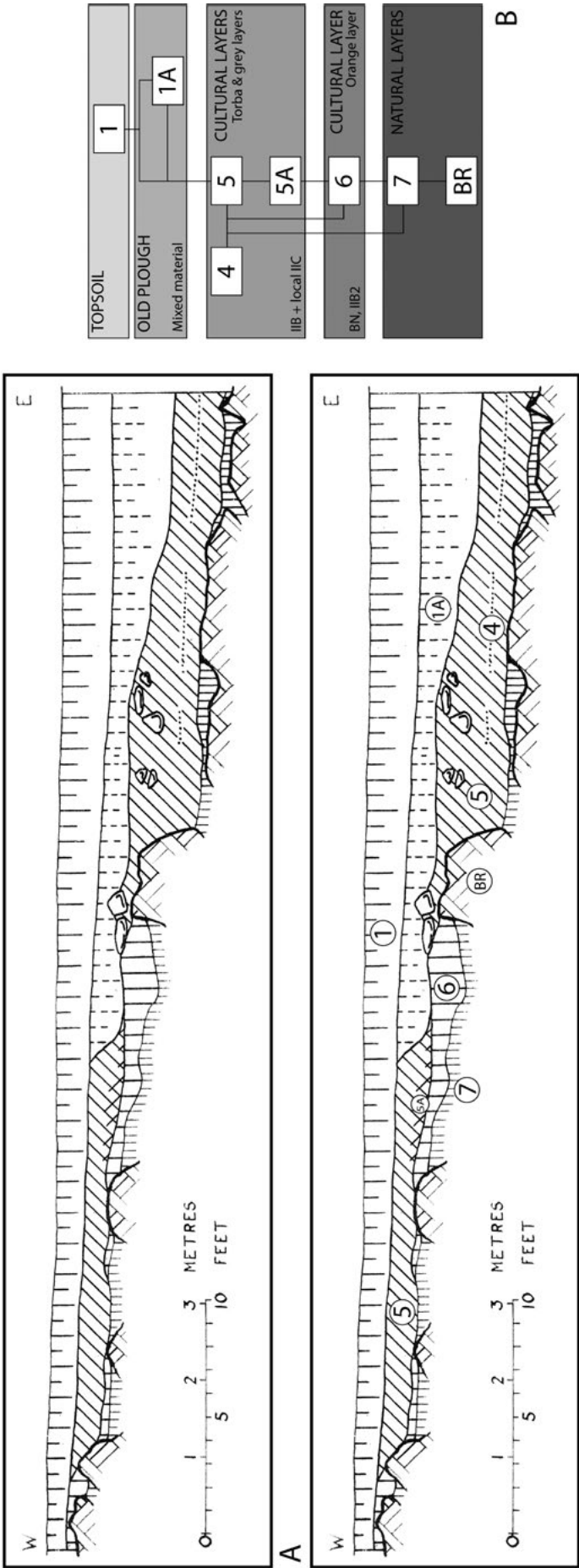


Figure 5. Trump published the drawing of the northern section of trenches B to D (A), in which the layers are not numbered. It is only through corroboration with the accompanying text and, particularly, the notebooks and sketches, that these can be clearly identified and a Harris Matrix be produced (B). (Original drawing after Trump 1961).

which led Trump to the conclusion that the Bahrija phase did not succeed, but ran parallel to the later Borġ in-Nadur phase (MAR 1959/60, p. 5; Trump 1961, p. 258). It is also from this layer that important bronze items like, for example, a 10 cm needle and a decorated finger ring, were recovered (MAR 1959/60, p. 5).

The third and lowest layer in Trump's published stratigraphy is what he described as an 'orangey clayey' soil containing ceramic material of the standard Borġ in-Nadur (IIB2) type and one small chip of bronze (MAR 1959/60, p. 5; Trump 1961, p. 258).

As already stated above, comparing these layers with the section drawing provided is not as easy as it may seem, mainly because of the lack of numbering on the drawing and the extra layers that are apparently visible on the same. To make things a bit clearer we have to look at the data provided in Trump's excavation notebook, where we can obtain brief details on each of the layers. Much more informative are four to-scale drawings of the northern section of trenches B-D, which evidently formed the basis onto which the published section was drawn, and which is redrawn here (Figures 6 and 7).

Combining the two sources, and using the layer number comparative table provided by Trump in the same

notebook (Table 1), we know that layer 1 – the topsoil – was consistently labelled throughout. The layer beneath it, originally labelled as a stony plough layer and later identified as the old plough layer, was originally labelled as layer 2 within trench B and 1A in trench C. These were later renumbered and combined as layer 1A. This is clearly defined in both section drawings (Figures 5 and 7). The artefacts discovered and described in the notebooks consisted of a glazed medieval jar lip, two green-glazed fragments, identified as Arab and six assorted Roman sherds recovered from trench B. Only one sherd seems to have been documented within the layer's confines in trench C, where a chunk of a furnace or hearth was also noted (Trump 'Notebook I', pp. 27, 28).

Beneath layer 1A, Trump identified a pocket of a stony plough extending along the western half of trench B and the eastern end of trench C, where it abuts a natural ridge or boulder. This layer was originally numbered as 3 but was later changed into layer 2 (Figure 7). Trump describes this layer as a softer brown soil sloping steadily towards the East and rich in large sherds (Trump 'Notebook I', p. 24). From his written records we know that the artefacts recovered include a bronze chip and needle, a half complete small cup with six knobs round the shoulder, a fragment from a Coralline Limestone quern, four round grinding pebbles, the stump of a

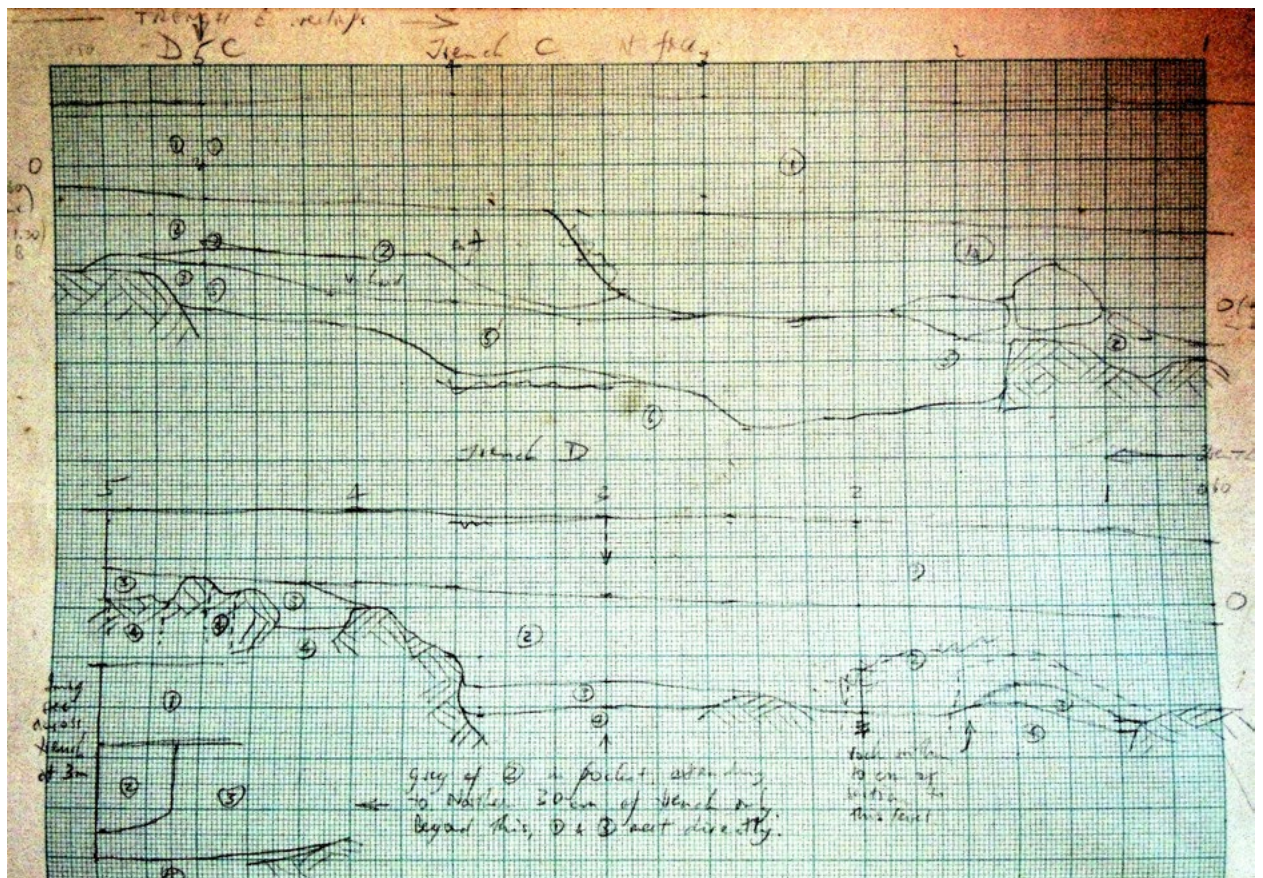


Figure 6. Accompanying Trump's excavation notebook are a number of to-scale drawings that give us direct insight into how the sections actually looked like. (after Trump 'Notebook I', p. opp. 27).

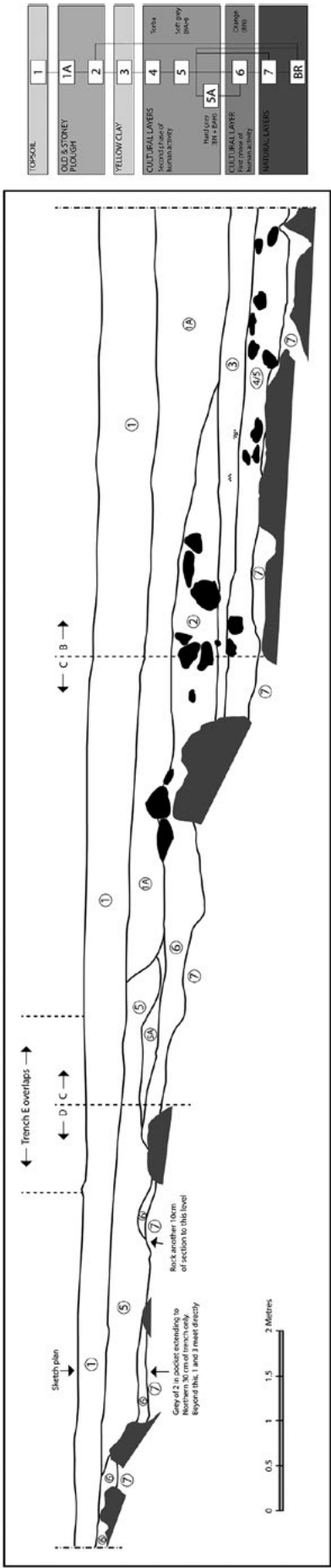


Figure 7. Trump's excavation notebook allows us to reconstruct the northern section of trenches B-D and the actual stratigraphic sequence of the excavation (based on sketches and notes in Trump 'Notebook I'; redrawn and compiled by D. Cardona).

ceramic anchor and the bones of pig, sheep and cow, as well as numerous sea shells. The ceramic assemblage included fragments from 20 vessels of 'Foreign Bahrija', 28 of 'Local Bahrija' as well as numerous fragments of slipped, unslipped and coarse wares (Trump 'Notebook I', p. 29).

Layer 2 overlays bedrock on its western end but extended over layer 3 towards the east. The latter consisted of a yellow clayey soil first encountered beneath layer 1A (old 2) in the eastern end of trench B and was thus originally labelled as 2A. After its exposure beneath layer 2 it was numbered again as 4 and was finally changed to layer 3 once Trump organised the labelling system. Unfortunately we do not have much when it comes to information on the finds. In fact, although the first references to the layer mention a layer containing large pots and comes with a detailed sketch of fragments from a large vessel drawn in situ (Figure 8) (Trump 'Notebook I': 24, opp. 25). When listing the finds in each layer, Trump writes that layer 4 contained no finds on the top. The reason for this remains unclear. It is, however, possible that Trump was himself confusing the old layer 4 with the new layer 4 – the remains of a *torba* floor – underlying the yellow clay. In fact, in the last reference to the layer, he identifies the layer as B with a 4 and a 5 written onto each other (Trump 'Notebook I', p. 29). The reference to the 'top' of the layer would actually make sense if he was referring to finds discovered on the surface of the *torba* floor.

This *torba* floor – originally layer 5 and later labelled as 4 – is one of the most enigmatic of the site. Most of it seems to have been uncovered in trench B but mention of it was even made in trench C, within the natural depression into which most of the layers of trench B and the eastern part of C were nestled (Figure 7). From the description we can deduce that the floor was found in a poor state of preservation and was uncovered in patches at the lower (eastern) end of the trench and covered by a foundation of heavy stones at its western end. Two slabs of Globigerina Limestone were set on edge and at right angles to each other towards the centre of the floor. We are not told what these may have been for, except that they projected well above the stony level and were reddened on their inner sides and out the top. We may thus be here dealing with a built hearth (Trump 'Notebook I', p. 25).

Apart from the note already mentioned above, not much is known on the artefacts recovered from this layer. To add to the mix-up, the few ceramic remains found within layers 4 (and 3) in trench C were bagged as from layer 5 with the exception of some very special pieces like a miniature cup and a bronze needle (Trump 'Notebook I', p. opp. 25). The reason why part of the material recovered from two layers was bagged and mixed together with those of another layer remains

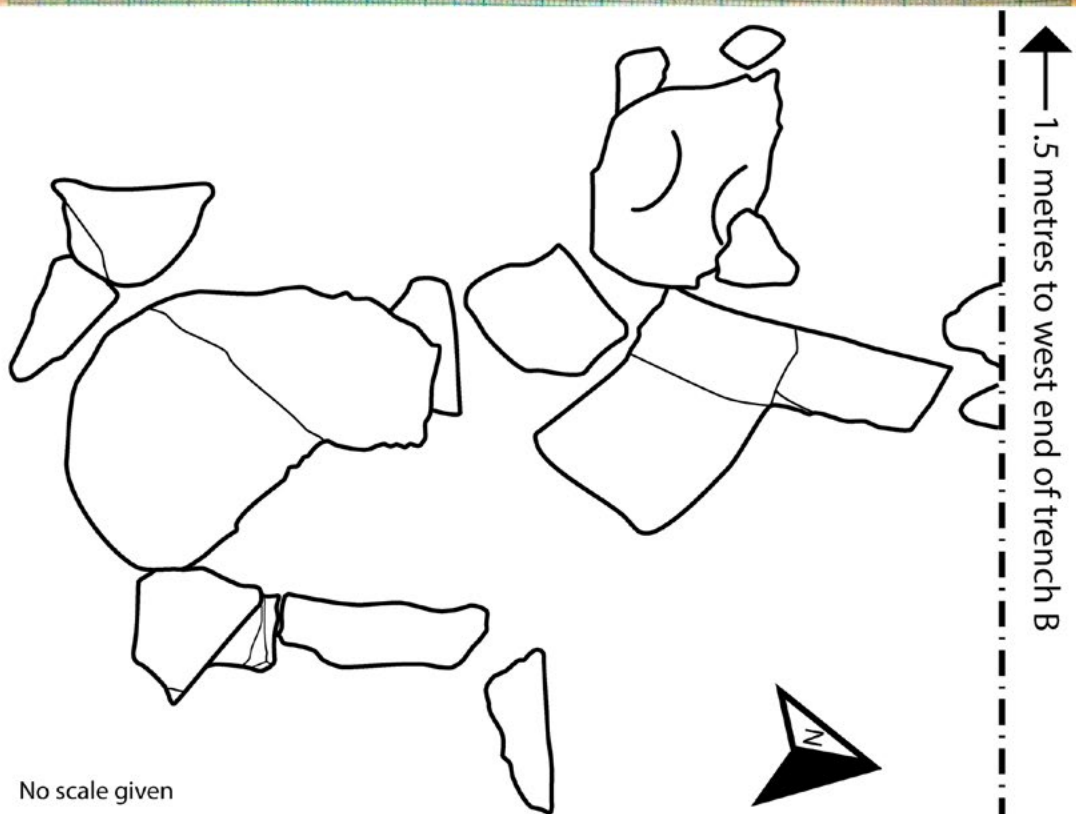
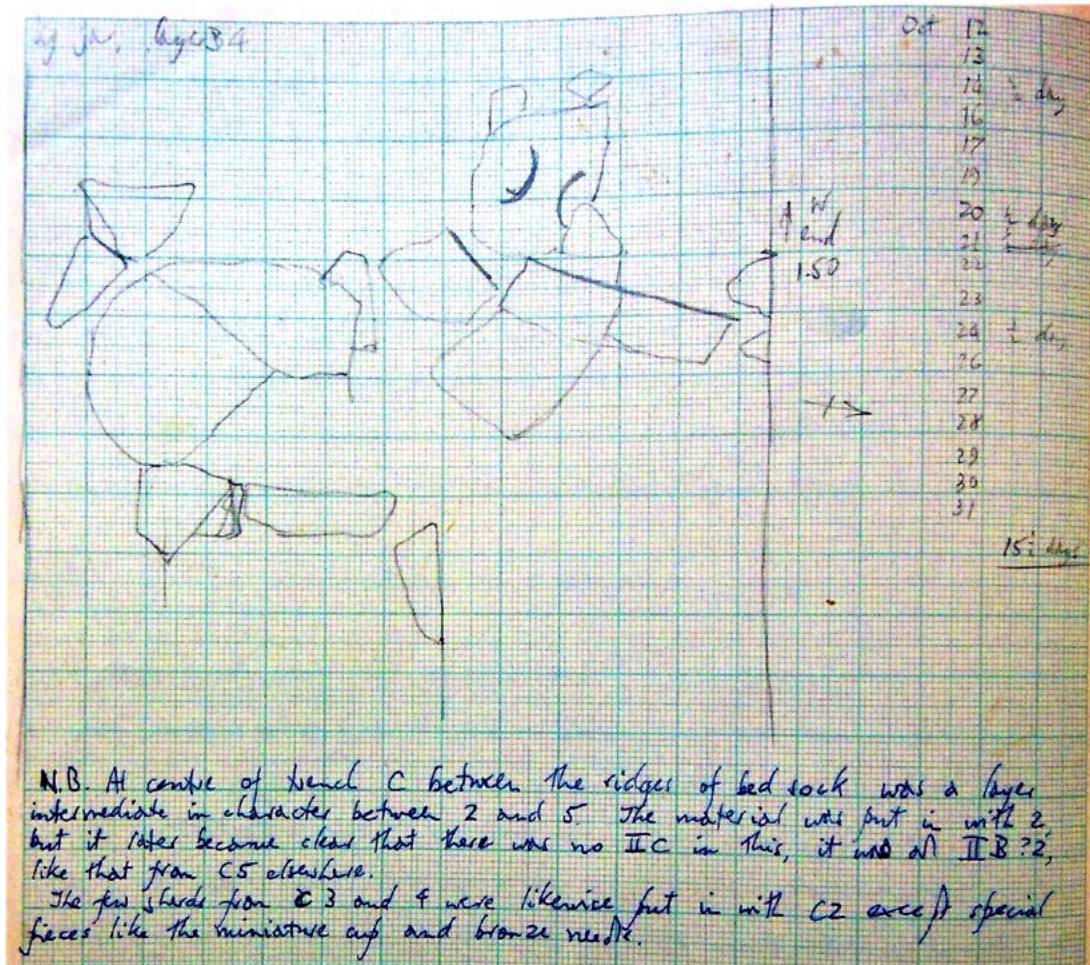


Figure 8. Fragments of a large jar in trench B.
(Original sketch from Trump 'Notebook I').

unclear, especially when one considers that not all the artefact from those units were given the same treatment. Whatever the reasoning behind this decision, this seems to have decisively marked an end to the *torba* floor as no further mention of it is made in any form of documentation.

The next stratigraphic unit in the sequence – the grey habitation layer – was identified throughout the trench (Figures 7 and 10). It was originally identified as layer 5 only within trench B while elsewhere it was initially identified as layer 2 (Trump 'Notebook I', pp. 25, 26). Only subsequently was it collectively known as 5. That this was the main cultural layer can be deduced by the materials recovered in it and the detail in which Trump lists them in his notebook. Worthy of note among the finds were numerous pieces of bronze (including the ring and needle already mentioned above), at least 3 fragments of querns (2 of which were in lava), lumps of ochre, at least one deer antler, a figurine head, 18 fragments of spindle whorls, 13 pieces of anchors, two looms and two grinders. The bulk of the pottery can be summarized into at least 41 painted fragments from no more than 35 vessels, 112 fragments of 'Foreign Bahrija', 151 of 'Local Bahrija' and 111 fragments of Borğ in-Nadur ware (Trump 'Notebook I', pp. 29-31). Combined, these made up the bulk of the evidence used by Trump in his interpretation of the site and its dating.

Sandwiched between layers 5 and 6, Trump identified a layer of the same, but more compact, matrix as 5. This was first encountered in trench C when it was labelled as 2A, but it was subsequently also discovered in trenches D, where it tapered out, extending northwards into trench E (Figures 7 and 10). This layer was evidently also an important cultural layer as it contained the large terracotta platter found in situ and for which we are lucky to have a sketch and a photograph (Figure 9). The other material was, however, at first not kept separate. Instead it was put with that of the overlying layer 5. Eventually though, it was realised that the ceramic assemblage contained no IIC fragments, but only the earlier IIB and was thus associated with the underlying layer 6 (Trump 'Notebook I', pp. opp. 25, 26). What happened to the pottery previously grouped with that of layer 5 remains a mystery but unit 5A seems to have been again regarded as a separate stratigraphic unit within trench E, where the finds were described separately. Surprisingly, the list provided also includes over a 100 fragments of Bahrija ware so it remains unclear if the previous note was a mistake or was later revised as more of the same layer was exposed (Trump 'Notebook I', pp. 31, opp. 32).

Beneath layers 5 and 5A within trenches C, D and E was another cultural layer, 6 (originally labelled as 5 in trench C and 3 in trench D), made of an orange material (Figures 7 and 10). It filled the hollows in bedrock

in sections and covering the whole trench in others (Trump 'Notebook I', pp. 25, 26). Although fewer in number, artefacts were also recovered from this layer. These included numerous pieces of red or black slipped pottery, fragments of unslipped vessels, at least 61 pieces of coarse ware and at least one fragment from an anchor (Trump 'Notebook I', pp. 32, opp. 33).

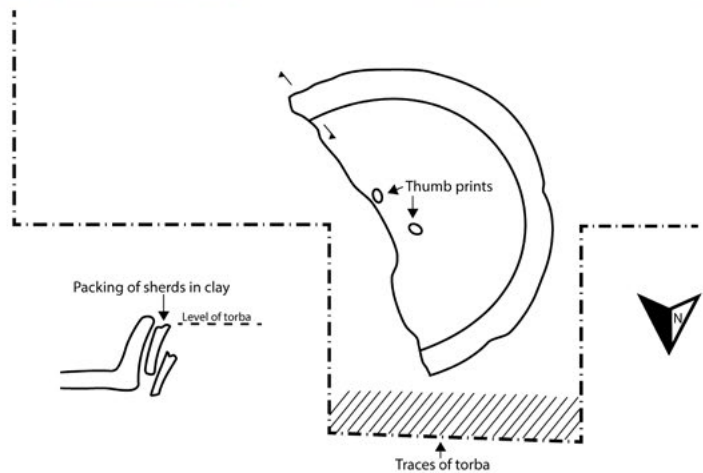
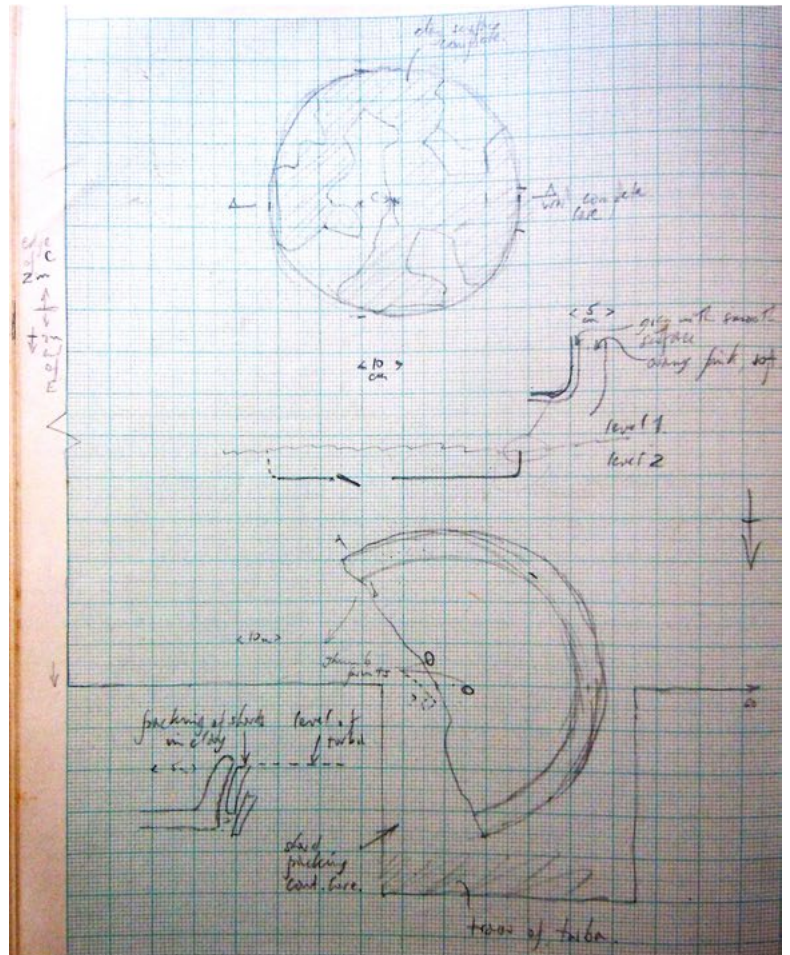
The last stratigraphic unit uncovered was a hard red layer found over bedrock and filling the fissures and hollows of the rugged bedrock underlying it. It is recorded as being sterile and thus probably a natural deposit that was present before the first cultural endeavours on Qlejgha tal-Bahrija (Figures 7 and 10) (Trump 'Notebook I', pp. 25, 26). It is also unclear whether this layer was removed in its entirety. The sections drawings do, in fact, record relatively large stretches of this layer without any bedrock being marked beneath, thus implying that most of this material was left in situ. A note on the sections drawings also remarks that bedrock was 10 cm further down from the surface of layer 7.

With the data from Trump's notebook in hand, we can now start to understand the stratigraphic sequence as published in the section drawing and attempt to answer some of the questions that have arisen. First and foremost, we can assign each of the layers shown in the section drawing published in both excavation reports a layer number. Thus, we can identify layers 1, 1A, 5, 6 and 7. Some difficulties do, however, still remain when this section drawing is compared to the data and the section drawings provided in the notebook, and most issues gravitate around layer 5 (Figures 5 and 7).

The published section does, in fact, show a relatively deep, chunky layer in both eastern and western halves of the trench. In the western half, the discrepancies concern the distinction between layers 5 and 5A. Trump seems to have been uncertain whether the two should be considered as separate stratigraphic units or part of the same, resulting in 5A being somewhat marked in the section drawing but not mentioned at all in any of the publications.

The situation is a bit more complicated in the eastern half of layer 5. We have seen that this area, (trench B and the eastern half of trench C) contained at least 4 distinct layers above the natural deposits; layers that, in description, seem considerably different than the grey, ashy matrix of layer 5. Yet, all were absorbed by the latter when published. Again, the reasoning behind this remains a mystery. Even more mysterious is the absolute omission of the *torba* floor discovered somewhere between layers 3 and 5, which may possibly be identified as the dotted lines across the chunky layer 5 in the published section but given no mention in any part of the text. Not only does Trump omit the

Figure 9. Among the main artefacts discovered during Trump's excavation is this platter found in the northern extent of trench E. The other platter sketched in his sketch (top) is not clearly identifiable but may possibly refer to the second hearth documented in trench E. (Sketch from Trump 'Notebook I'; Photos courtesy of Heritage Malta).



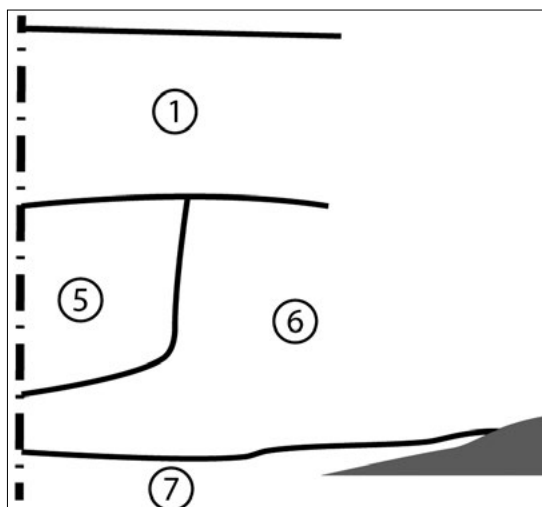


Figure 10. Taken across the third metre of trench D, this sketch provides the only plan of Trump's entire excavation. It is accompanied by a note stating that the grey layer 5 was found in pockets extending to the northern 30 cm of the trench only. Beyond this, 1 and 6 meet directly. (after Trump 'Notebook 1').

remains of this floor, but he goes as far as describing the two hearths found in trench E as the only structures discovered during the excavation (Figure 9) (Trump 1961, p. 5), leaving out the remains of a wall and possible hearth found in clear association with the *torba* floor within trench B. Indeed, when looking at the section reproduced from his notebook's sketches, the location of this floor seems to perfectly fit the descriptions being given by Peet for similar structures uncovered a few metres further North, with a *torba* floor seemingly levelling off a natural hollow in bedrock and using the upper ridge of this hollow as a foundation for its walls.

It remains unclear why such important features for the understanding the site were left out in the final publication of the excavation. There are, however a number of possibilities that may be pinpointed. The first of these reasons might be the audience for which Trump was writing, which may not have been interested in detailed discussions of stratigraphic units and features. But what, in my opinion, tops the list is the main research question that led Trump to excavate the site in the first place. This was not, in fact, strictly to study the village but to analyse in greater detail the Bronze Age ceramic typologies that had been evolving through the works of Evans and Trump's own excavations at Borġ in-Nadur (MAR 1959/60, p. 4; Trump 1961, pp. 253, 258). More space is thus given in Trump's report to the analysis of the ceramic assemblages than to the detailed description of the stratigraphic sequences and other structures. It is indeed through this analysis that Trump could define the various phases of the Baħrija assemblages and their relationship with other Bronze Age centres on the island (Trump 1961, pp. 258-262) – all of which will be re-discussed and appraised in greater

detail later in this publication. This also meant that the trench's section could be simplified to accommodate the questions he was trying to answer. That would also allow for different stratigraphic units, whose descriptions showed them as completely different, to be grouped into one if the ceramic assemblage found in them was similar. Hence the more simplified version of the section published in his 1961 report. One may think of it as a section intended to show the main ceramic assemblages within a vertical plain rather than showing the different phases of activity on the site.

The final product of this is that we are left with two, quite distinct but intimately related Harris Matrices which are being reproduced here from the two different sections Trump documented, with the one based on the published report, more representative of the ceramic sequence, and the one from his notebook being a true representation of the sequence of activity on the site (Figures 5 and 7). Both are important in their own way but have to be read in conjunction with each other for the site to be understood comprehensively.

4. Zammit, Cardona, Bonanno – new eyes, new minds, old site

Admittedly, the site has received considerably little scholarly attention after Trump. This could have been spurred by the fact that the Qlejgħa tal-Baħrija was, and remains, private property or by the meagre structural remains documented in Trump's report. The situation changed, with Maria Elena Zammit's MA research, parts of which are also being reproduced in this publication (Zammit 2006).

It was only through Zammit's work that the site could start to be seen as a whole – il-Qlejgħa tal-Baħrija – rather than as a number of trenches on the Qlejgħa tal-Baħrija. Conducting a field walking survey of 119 tracts over the whole promontory, Zammit recorded more than 16,244 ceramic sherds and other artefacts. Although some tracts were more prolific than others (for example tracts 5, 9, 10 and 12), her study reveals that the ceramic scatter is spread all over the hilltop, even in those areas where surface visibility or soil cover are minimal (Zammit 2006, pp. 47, 49, 69, 70). This survey also led to the identification of some pottery from Trump's first Borġ in-Nadur phase and not just form the latest one as attested in his 1961 report, thus indicating an earlier occupation or, at least, frequentation, than previously thought.

Also part of Zammit's survey was the documentation of other features like large boulders (some of which were also documented by Trump) (Zammit 2006, pp. 51-52) and, most importantly, the numerous bell-shaped pits that dot the hilltop's landscape. These include a group of pits, previously recorded along the western

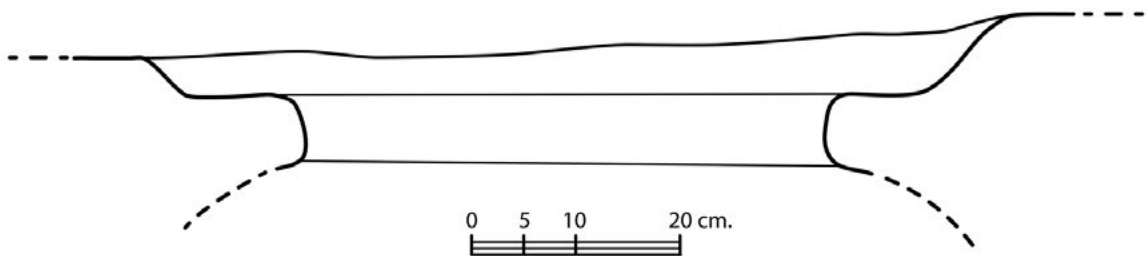


Figure 11. Among the pits studied by Zammit and Cardona are a few preserving an intact rim intended to hold a lid, like the one shown here.

edge of the cliff, which had somehow been previously undocumented (Figure 11) (Zammit 2006, pp. 51-52). This last group of pits, and a suspicious cut in the

bedrock in which they were excavated led to the 2015 publication by Zammit and Cardona of a study of this interesting group of features. Here, it was suggested

that these pits were cut in an area the topmost layer of rock of which was quarried away before the pits were excavated – making this the earliest documented quarry on the Maltese Islands (Cardona and Zammit 2015).

Just a year later Prof. Anthony Bonanno discussed the Baħrija phase in detail while dealing with the question of cultural continuity that may have straddled the Maltese Late Bronze Age and Phoenician period. Here, Bonanno tries to understand the apparent sudden appearance of the Baħrija ware in the local ceramic assemblage which, bearing similarities to the Fossa Grave culture of Calabria and the Apulian geometric ware from Coppa Nevigata and Torre Castelluccio, would implicate an influx of foreigners into the island – as had been previously suggested by Peet – with possible influences from the Aegean world (Peet 1910, p. 163; Bonanno 2016, pp. 243, 249-250). Moreover, Bonanno, also documents the discovery of typical Baħrija ware at Tas-Silġ and Borġ in-Nadur, thus showing that the concurrent discovery of both Borġ in-Nadur and Baħrija cultures at the Qlejgha hill was not only the result of previous occupation by the earlier Bronze Age inhabitants, but that the two cultures were actually engaging in two-way contact and engagement, with the later Baħrija culture having an influence across a much wider area than previously thought (Bonanno 2017, pp. 249-250).

5. Conclusion

We have set off in the quest of understanding the various scholarly works undertaken on and about il-Qlejgha Hill. This took us from Peet's first excavation in the 1910 which, although with the limitations of the time, provided the world with the first glimpse of the archaeological potential that this small hillock contained. From Peet we have moved to Trump, who resumed the excavations on the plateau in the quest for new data on the cultural connections between the Baħrija and Borġ in-Nadur phases of the Maltese Bronze Age. Finally we have seen how modern research has been combining new data with that captured decades ago to offer new, more holistic interpretations for the site.

Yet, we are still left with boxes of archaeological material recovered around 90, 60 and 10 years ago, which have never been studied using the modern

technologies available to us. And this is where this publication will play a major contribution. The use of technological practices will provide new insights and, thus, new interpretations for this site and the materials recovered from it. All this is being done without any new excavations on the field but not because the site does not require further excavation. The features uncovered in the few trenches described above and the results obtained through the recent field walking survey have shown that much remains uncovered and undocumented.

References

- Bonanno, A. 2017. From Prehistoric to historic Malta: a discussion of the sources. In Mizzi, D., Vella, N. C. and Zammit M. R. (eds), *'What Mean these Stones?' (Joshua 4:6, 21): essays on texts, philology, and archaeology in honour of Anthony J. Frendo*, Ancient Near Eastern Studies Supplement Series, 50, Peeters, Leuven, pp. 243-254.
- Cardona, D. and Zammit, M. 2015. The Bronze Age settlement at il-Qlejgha tal-Baħrija, Malta: notes on the rock-cut features, in Tanasi, D. and Vella, N. C. (eds), *The Late Prehistory of Malta: Essays on Borġ in-Nadur and other sites*, Archaeopress Archaeology, Oxford, pp. 161-172.
- Malone, C., Grima, R., Magro-Conti, J., Trump, D., Stoddart, S. and Hardisty, H. 2009. The Domestic Environment, in Malone, C., Stoddart, S., Bonanno, A. and Trump, D. (eds), *Mortuary Customs in Prehistoric Malta: excavations at the Brochtorff Circle at Xagħra (1987-94)*, McDonald Institute for Archaeological Research, Cambridge, pp. 41-56.
- Peet, T.E. 1910. Contributions to the Study of the Prehistoric Period in Malta, *Papers of the British School at Rome*, Vol. V, 1910, pp. 141-163.
- Trump, D. H., 'Notebook' I, unpublished notes.
- Trump, D. H., 'Notebook' II, unpublished notes.
- Trump, D. H., 'Field Notes', unpublished notes.
- Trump, D. H. 1960. Report on the Working of the Museum Department for the Year 1959-60, Government Printing Press. (MAR).
- Trump, D. H. 1961. The Later Prehistory of Malta, *Proceedings of the Prehistoric Society for 1961*, Vol. XXVII, December 1961, pp. 253-262.
- Zammit, M. 2006. An Archaeological Survey of Baħrija, dissertation presented to the Faculty of Arts of the University of Malta, as required for the degree of Master of Arts in Archaeology.

Chapter 2.

Il-Qlejgħa tal-Baħrija: an archaeological survey

MariaElena Zammit

1. Introduction

Bronze Age remains were excavated from the Qlejgħa plateau in 1909 and 1959 by Eric Peet and David Trump. Large scatters of pottery observed on the hilltop, however, seemed to include material which is not usually associated with the Bronze Age. What follows is a presentation of the results of a study carried out between 2002 and 2005 as part of a research project for an MA dissertation at the University of Malta (Zammit 2006). This involved: the integration of information that was already known about the site, recording the extent and location of past interventions and finds; a field-walking survey of the hilltop and surrounding areas to be able to consider the site within its landscape context; and plotting the distribution of, as well as analysing ceramic scatters on the hilltop, comparing them to material from previous excavations held in the national collection.

2. Preliminary Research

Several important finds were made during the excavations of 1909 and 1959. The report of the first excavation was published soon after, in 1910. Peet describes his findings, and writes that a large amount of fragmented pottery sherds were found in all the seven trenches that were excavated. Most were found in a grey deposit, together with animal bone, sea shells, pebbles, carbonized matter, loom weights and spindle whorls. In two of the trenches, 'flat masses of sun-baked clay', some of which had imprints of reeds on one side, were found next to pockets of rock and above a *torba* surface 3.4 m by 1.7 m. This seemed to be patching up one such pocket of rock (Peet 1910, p. 151). The grey deposit covered both the *torba* surface and the rock next to it, suggesting that the bedrock was patched up with *torba* to create a smooth surface (Peet 1910, p. 153). The report includes the only photograph of this floor surface. Following this excavation, the site was occasionally revisited to collect artefacts for the museum collection (MAR 1913-1914, pp. 1-2; MAR 1927-1928, pl. IV; Murray 1929, p. 19, plate XXIX). In 1913/14, a cave settlement was noted in the cliffs on the western side of the hill. Some of the caves were still inhabited when the report of that particular visit was published (MAR 1913-1914, pp. 1-2).

Further excavations of the hilltop were carried out by David Trump in 1959 (Trump 1958-1961, pp. 24-33a; 1961; MAR 1959-60, pp. 4-5). Trump found similar deposits to those found in 1909, with material from both the Borġ in-Nadur and Baħrija phases. The Borġ in-Nadur phase was found to be earlier, but also contemporary with the Baħrija phase (Trump 1961, p. 258). Other, more recent, investigations in the area led to the documentation of other features in the landscape, such as ceramic scatters and cave-dwellings (Zinn and Anati 1988, pp. 199-210; Buhagiar 2002, pp. 117-125). In the absence of further documentation about the historical significance of this area, such as maps and land registers, it seemed that an intensive field-walking survey would help understand better the landscape context of the Bronze Age site.

3. Survey Design and Methodology

The area surveyed covered most of the Qlejgħa hilltop, the accessible parts of the maquis and boulder scree below the cliffs at the tip and western side of the plateau, parts of il-Blata tal-Melħ and an area on the eastern side of the Baħrija valley. Land surveyed was divided into tracts, with each tract treated as one unit. Where possible, tract size and shape followed existing field divisions. Individual fields often have similar visibility and vegetation growth, which facilitates recording of pottery scatters. Moreover, they are clearly marked on maps and can therefore be easily relocated. In areas where the land was not divided into recognizable fields, tracts were defined arbitrarily into areas with similar vegetation growth and visibility. In some areas, the landscape consisted of impenetrable thick maquis and detached boulders from the cliffs above. This type of landscape occurs below coralline limestone plateaux and is the result of erosion. While upper coralline limestone is hard and resistant to erosion, the clay below it erodes quickly and washes away, especially around the coast where wave action is added to that of wind and water. As a result, the coralline limestone above is undercut and collapses onto the clay slopes, protecting them from further erosion (Pedley *et al.* 2002, p. 83). Many species of flora and fauna, including endemic ones, find refuge within this type of environment, as it is sheltered and inaccessible (Schembri 1993, p. 30). In these areas, the survey had to be limited to clearings among the boulders and vegetation. In these cases, a

handheld GPS was used to identify the location of tracts on the map.

Walkers worked in teams of two or three and walked in straight lines at intervals of 5 m. In this way, 80% of the surveyed area was covered, as the area visible from each walker's standing point is thought to be approximately 1 to 2 m on each side (Cherry *et al.* 1991, p. 20; Bintliff and Snodgrass 1988, p. 506). Walkers were spaced at 5 m intervals since local fields are often very small and vegetation growth – and therefore visibility – differs from one field to the other, especially within abandoned fields. Accessible clearings within the boulder scree were also very small and would have had to be left out completely if walkers were working at larger intervals. Finally, one of the aims of the exercise was to be able to plot the distribution of scatters and other cultural features on the Qlejgha plateau, in order to be able to understand the nature and extent of the remains on site. Since most of the survey area consisted of the plateau itself, such an intensive coverage was deemed necessary.

Information collected from each tract was recorded on prepared forms, taking note of the location of each tract, visibility, slope, present-day land use, sherd count and distance walked, features identified (built or rock-cut) and a sketch of the tract including the location of features observed. Most of the form consisted of multiple choice options, to ensure consistent and efficient recording. Clickers were used to count all visible sherds in each walker's path, while clearly diagnostic sherds were collected. This was done to avoid collecting large amounts of undiagnostic, highly fragmented and eroded pottery sherds which are very difficult to identify while at the same time keeping a small sample for later study. No sherds were originally collected from the Qlejgha hilltop, since the area had already been identified as a Bronze Age site and plenty of material had been recovered from the site during excavations. A sample of material from the hilltop was later collected in order to allow comparisons with excavated material.

Survey progress was slow for a number of reasons. Apart from limited resources, the survey areas were only accessible on foot and the time available for work was reduced considerably due to long travelling times. Additionally, pottery counts on the Qlejgha hilltop were very high and therefore, it took walkers a very long time to survey tracts on this part of the survey area. Access to some fields was denied by their owners to avoid damage to crops being grown there, while other areas consisting of very steep clay slopes, such as those leading to a wind-cut platform at il-Blata tal-Melĥ, were physically inaccessible.

After the walking survey was completed, a sample of pottery was collected from a selected area on the

Qlejgha hilltop, following methods used on the islands of Keos and Kythera in the Aegean (Cherry *et al.* 1991, pp. 29–30; Broodbank 1999, p. 197). The area chosen for this exercise has, at least since the 1959 excavation, been noted for having a thick scatter of sherds (Trump 1961, p. 258). The walking exercise confirmed that the area had the highest density of material. Nonetheless, this part of the hilltop was never investigated in the past, probably since most of the sherds are scattered over a garigue landscape. A 5 x 5 m grid was laid out on the selected area and a peg with a 1.26 m long string attached to it was fixed at the centre of each square. The string was used to create a 5 m² circle within each square, from which all pottery sherds visible on the surface were collected. The material within the rest of each square was counted. Thirteen squares were sampled in all. Thus, a sample of material was obtained for study, and was later compared with material which had been excavated in 1909 and 1959.

4. Study of the Ceramic Remains

Pottery remains found on the surface are usually highly abraded, as they would have been exposed to the elements for a long time, and would have also suffered damage from agricultural activity (Taylor 2000). As a result, surface sherds often lose their diagnostic features such as shape, decoration and surface treatment. Therefore, it was felt that, as suggested by Peter van Dommelen, more emphasis would be given to pottery fabrics rather than shapes, as this would, in this case, be the most important feature to identify the material collected (Van Dommelen 2000, p. 27). Since the scope of the study of pottery from past excavations was to enable identification of the surface material, at this stage it was analysed irrespective of its context.

A total of 119 individual tracts were surveyed (Figure 1) and in these, 16,244 sherds were counted.

Surface visibility ranged from 5% to 100%. A further 2,727 sherds were counted on a selected area of the Qlejgha hilltop, of which 841 were kept for further analysis (Figure 2). Significant parts of the area surveyed consist of natural environment, namely garigue, clay slopes, thick maquis vegetation and large boulders detached from the cliffs above. Such environments are often used for hunting purposes and the landscape is, in fact, dotted with small circular rubble huts, known locally as *duri*, that are built to provide shelter for hunters and trappers. Evidence for hunting and/or trapping activity was noted in 49 out of the 119 tracts surveyed. Three of these were also used for the cultivation of crops but had trappers' huts built within them. Some tracts to the northwest of the hilltop consisted of level ground created by spreading soil onto an uneven surface. These areas were then used as trapping grounds. A large part of the Qlejgha plateau is made up of cultivated terraced

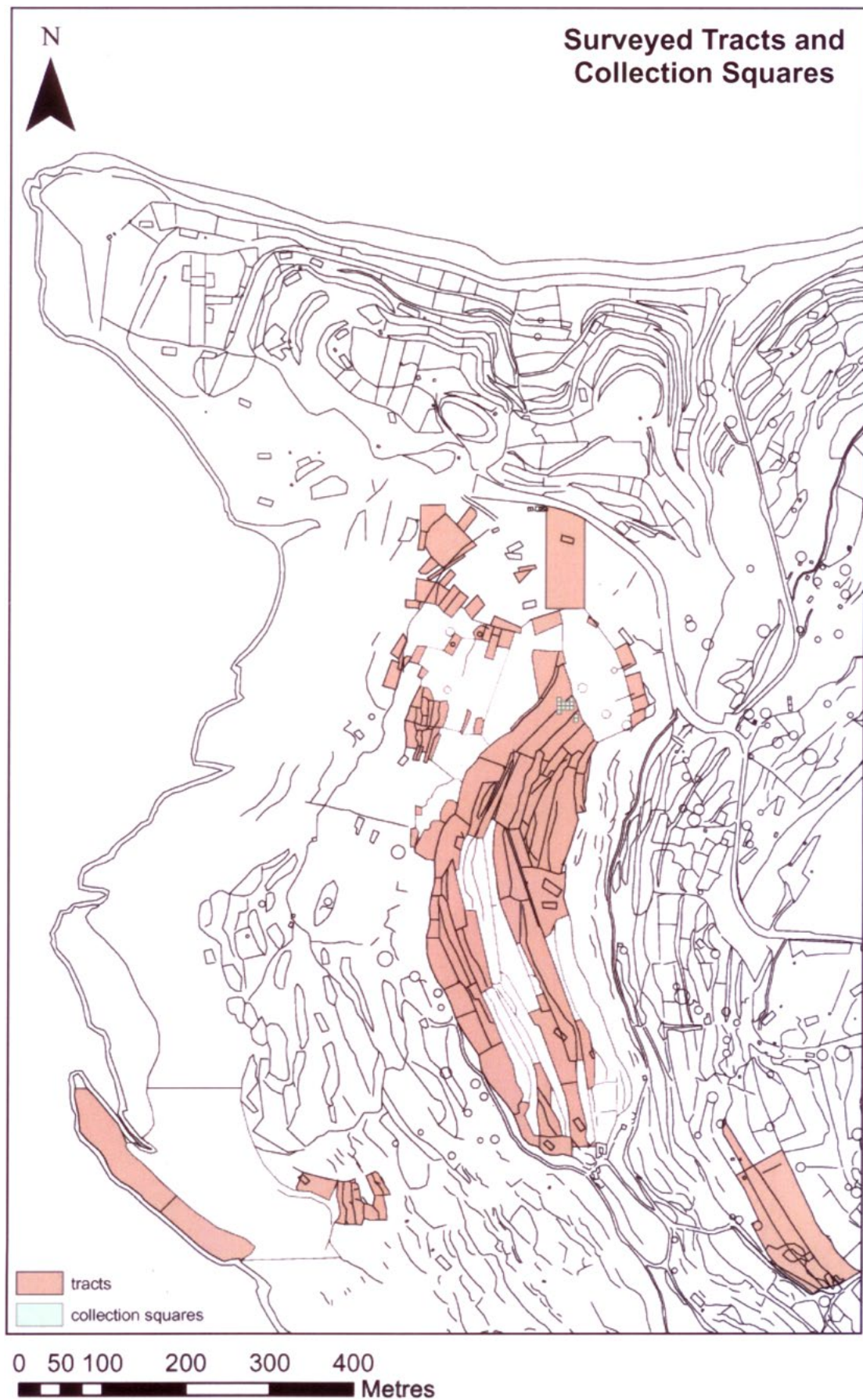


Figure 1. Tracts surveyed and sample area from where pottery was collected (collection squares).

fields. Terraced fields were also recorded in clearings within the boulder scree below the cliffs to the west of the hilltop. However, all of these had been abandoned. The rugged landscape that forms below upper coralline limestone plateaux 'defies most attempts at agriculture' (Pedley *et al.* 2002, p. 83).

4.1 Composition and formation of surface scatters

A thick scatter of pottery sherds was spread all over the Qlejgha plateau, but the highest concentrations of sherds were found in four tracts located at the tip of the hilltop, where counts ran into thousands (Figure 2).

The concentration of sherds in these tracts is even more significant when sherd counts are compared to surface visibility. 65% of the surface was visible in two of the tracts, while in the other two, walkers could only see 10% and 35% of the surface. This means that counts in these tracts would have probably been much higher had more of the surface been exposed. Three of these tracts were located on garigue landscape. This makes the presence of the highest amounts of cultural material here quite intriguing as soil deposits are absent in these areas. What would explain, then, the presence of so many pottery sherds in these tracts? One possibility could be the displacement of material by humans, as larger sherds and stones are sometimes moved to the sides of fields during ploughing, for example. During the collection exercise, it was noted that a considerable number of pottery sherds had been piled in one area of the square, suggesting that they were collected from nearby areas and piled in that particular spot. The displacement of sherds by humans, however, cannot be the single reason why so much material (a total of 6,701 sherds from these four tracts, comprising 41% of all the material recorded) was counted at the tip of the hilltop. A possible contributing factor to the formation of artefact scatters is soil erosion (James *et al.* 1994, p. 395). An intensive archaeological survey in Methana, Greece, aimed at assessing the soil erosion on the archaeological record, has shown that in the long term, the erosion of soil on gentle slopes results in the removal of fine soil, leaving larger particles such as stone and pottery fragments in place (James *et al.* 1994, pp. 410-412; James *et al.* 1997, p. 25). As a result, 'on much of Methana's previously cultivated land, soil erosion may have brought sites into sharper focus by stripping them of the soil which concealed them' (James *et al.* 1994, p. 412). The Qlejgha hilltop slopes gently to the east and soil erosion may have, over the years, contributed to exposing the large numbers of pottery sherds counted. The other tract in this group of four with very high sherd counts has, some time after 1960, been planted with pine trees in order to provide shelter for birds, as the area is used for hunting, as no trees are visible on the Qlejgha hilltop in an aerial photograph taken by the

H.M.S. Falcon Photographic Section on the 24th January 1960. Soil deposits were probably disturbed during this process which may have brought cultural material to the surface. However, two other tracts planted with the same type of tree and having the same level of visibility, produced a much lower sherd count than this particular tract. The concentration of finds at the tip of the Qlejgha hilltop, therefore, is still an interesting feature.

Three terraced fields on the eastern side of the Baħrija valley were surveyed in 2002. They had an average count of 56 sherds but the diagnostics collected were too eroded to be able to identify them. The area was revisited in 2004 with the aim of investigating further, but the terraced fields and terrace walls were found to be completely destroyed and transformed into one large vineyard. As a result, this area could not be investigated further.

Three clearings within the boulder scree to the northeast of the hilltop contained a considerable amount of Punic or Roman material. This cleared space was covered in a dark, ash-grey soil. It was noted that this type of soil was limited to these tracts, and was very different from the greenish, clayey soil that was found in the surrounding areas. The material located here, therefore, may have been the result of shifting of soil from other areas.

4.2 Rock-cut and built features

Forty-two, bell-shaped, rock-cut pits were recorded on the Qlejgha hilltop. A group of eight interconnected pits were, at an unknown date, partly mutilated and enlarged to be used as animal pens. The capping stone of two of the pits was, however, left *in situ*. The space created was partitioned by dry-stone walls and can be accessed through a rectangular enclosure fronting it.

In some areas on the western side of the hilltop, the surface of the rock had been quarried, with the cut section clearly visible in the rock. Fifteen pits recorded in this same area were cut inside the quarry. These were revisited and studied in 2015 and the quarrying activity was dated to not later than the Bronze Age (Cardona and Zammit 2015, pp. 161-171).

A number of large blocks re-utilized within dry-stone field and terrace walls were recorded. Some of these had been plotted on the 1959 site plan, however, they do not seem to follow a particular plan. A number of field walls had particular features which set them apart from others in the vicinity. One of these, on the northwestern side of the hilltop is built using blocks that are larger than those normally used to build field and terrace walls (Figure 3).

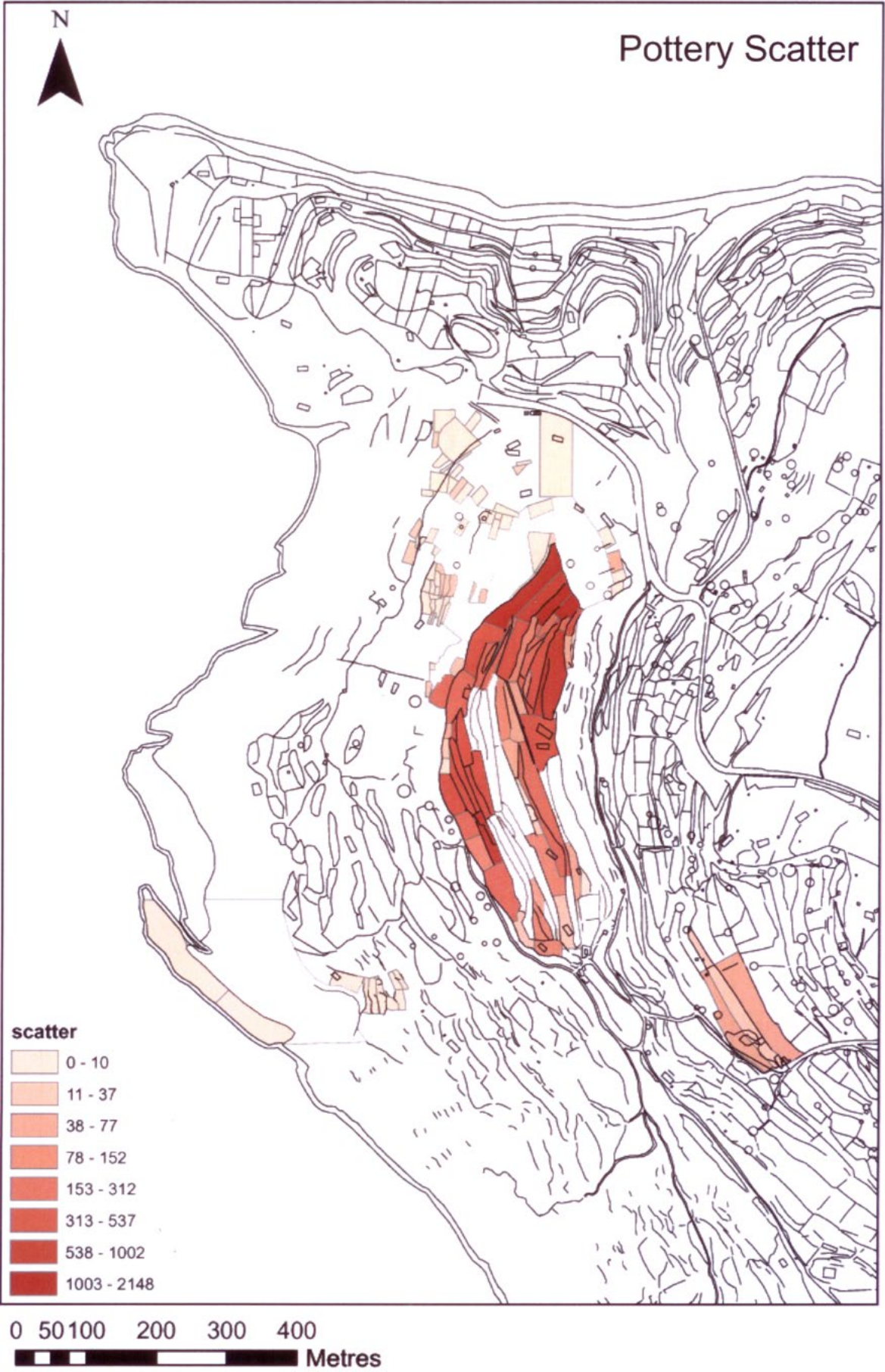


Figure 2. Pottery counted in the survey area, grouped by density.

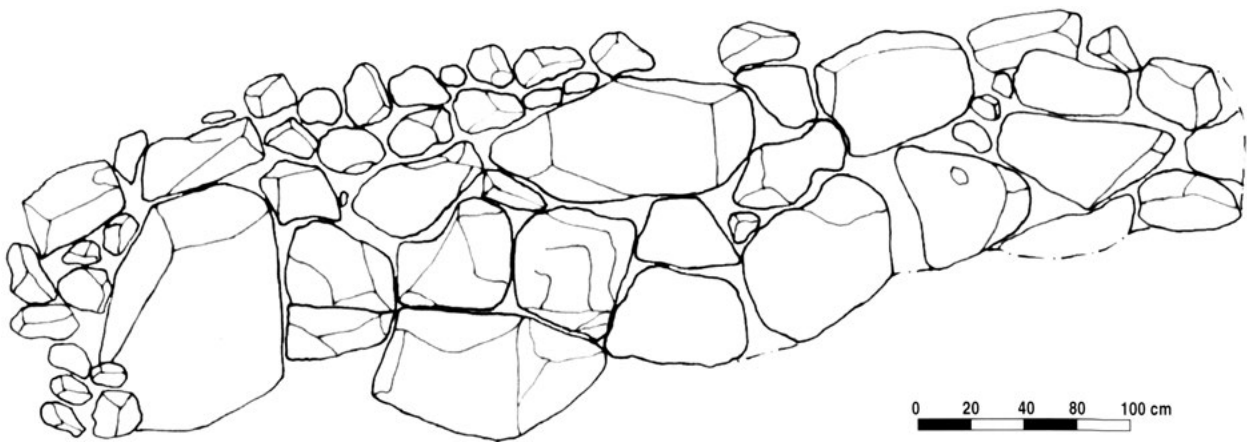


Figure 3. Wall built in large masonry found in Tract 35
(Drawing M. E. Zammit).

A regular field boundary wall is then built on top of this wall. Another wall, located towards the centre of the hilltop was found to be much wider than the other field walls. For a stretch of 7 metres, this wall is 3 metres wide. Another stretch of wall also has another rubble wall built on top of it. It is not known when the terrace walls in this area were built. The discovery of an Arab sherd within a deposit trapped behind a terrace wall led David Trump to conclude that some of the terrace walls on the hilltop cannot be earlier than the Arab period. (Trump 1961, p. 258). A document dating to the late 15th century stating that a field owner repaired the surrounding wall of his field and built an inner one shows that field walls were definately being built and repaired at the time, although whether these were simply field walls or whether they formed part of a terracing system is unknwn attempts to locate land registers or old maps of the region to see how the landscape, including field boundaries, has changed over time were unsuccessful.

4.3 Ceramic material from the 1909 and 1959 excavations

In order to contextualize the materials collected during the survey in the pottery production documented at Qlejgha tal-Bahrija, materials from 1909 and 1959 excavations were preliminary reappraised. Six different ware types were identified during that study. These are described below and summarized in Table 1. Some of these wares correspond to the established Bronze Age typologies defined by John Evans (1953; 1971) and David Trump (1961).

Ware 1 – Reddish yellow fabric with red to black mottled slip

A light-coloured fabric, in the range of 5YR 6/6 to 7.5YR 6/4, 6/6, 7/4 and 10YR 7/4, with a grey to dark grey core (5Y 6//1, Gley 1 N 4/, Gley 2 10BG 5/1, 10G 4/1) due to imperfect firing. The ware is hard, has a rough feel and fractures irregularly. Inclusions consist

Ware Types from the 1909 and 1959 excavations				
Ware Number	Ware Description	D. H. Trump	J. D. Evans	T. E. Peet
Ware 1	Reddish yellow fabric with red to black mottled slip	II B 3 (Borġ in-Nadur phase 3)	Handmade, buff ware – Borġ in-Nadur phase	/
Ware 2	Reddish yellow fabric with thick red slip	II B 1 (Borġ in-Nadur phase 1)	Handmade, buff ware – Borġ in-Nadur phase	/
Ware 3	Black ware with cut-out geometric decoration	II C 1 and II C 2	Bahrija Ware	‘Bahria’ Ware
Ware 4	Handmade, coarse fabric with shell-like inclusions	/	‘coarse unslipped fabric’? [ware not described]	Clay with ‘a considerable proportion of small fragments of quartz’
Ware 5	Handmade, coarse fabric with grog	/	/	/
Ware 6	Coarse fabric with grass/ straw inclusions	/	/	/

Table 1. Ware types as classified for the purposes of this exercise (columns 1 and 2), with corresponding ware types identified by David Trump, John Evans and Eric Peet.

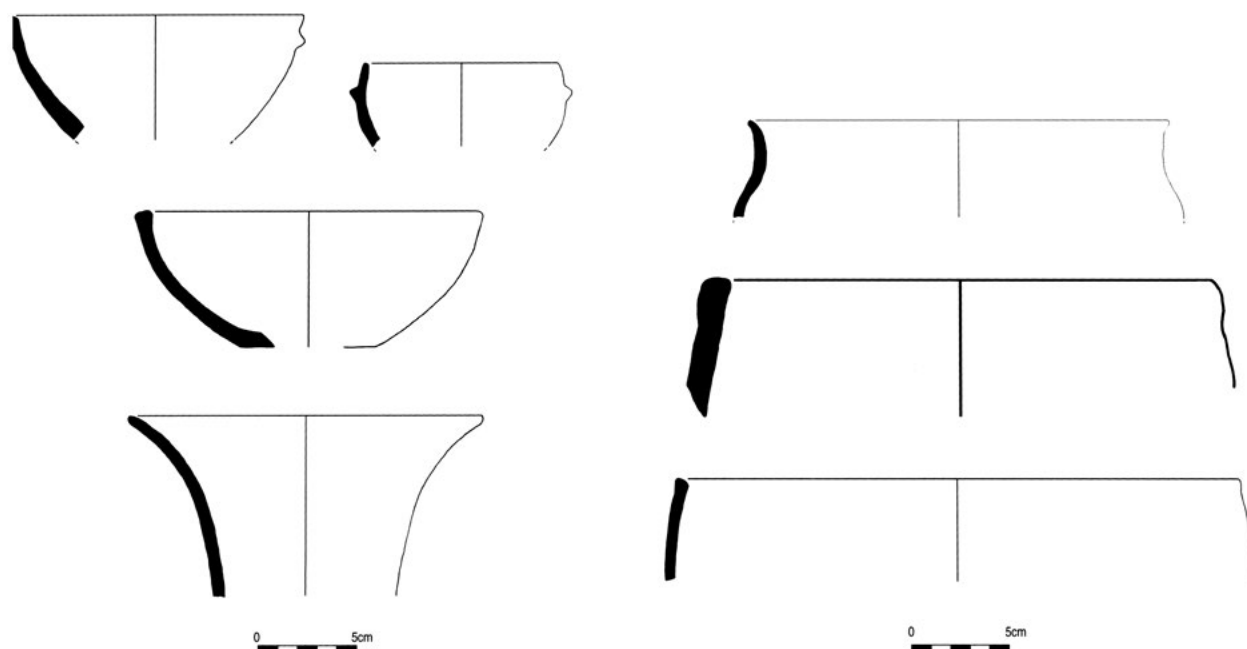


Figure 4. Examples of Ware 1
(drawing M. E. Zammit).

of large (0.5 to 3 mm), well-sorted voids and occasional white specks (0.1 to 0.5 mm). The surface is covered with a red to black (2.5YR 4/6, 5/6, 2.5YR 4/3, 4/4, 5YR 4/4, 7.5YR 4/2, 10YR 5/3, 5Y 4/1, Gley 1 N 3/, and N 2.5/) mottled slip that has a tendency to crackle and flake off. The slip is almost always burnished, but there are a few exceptions. In some cases, sherds seem to have two layers of slip. This is especially visible when the top layer (usually black) is flaking off, exposing another layer (usually red) below. Decoration includes incised lines which were probably filled with a white paste, consisting mainly of horizontal parallel lines below the rim, a horizontal line below the rim with equally-spaced knobs set in it and zigzags enclosed within parallel lines. Shapes include bowls sometimes with inverted v-lugs, vessels with a long, flaring neck and large, deep vessels (Figure 4). Handles are either rounded and vertical or splayed, but T-handles and 'horn' handles are also common. Some handles that survive attached to parts of the body of the vessel show that they may have been produced separately and were already leather-hard when they were attached to the vessels.

Ware 2: Reddish yellow fabric with thick, red slip

A soft, reddish yellow (5YR 6/6, 7/6, 7.5YR 6/6, 10YR 6/4, 7/4) fabric, that leaves a powder on the fingers when handled. The core is usually grey to dark grey (2.5Y 6/2, 5Y 5/1, Gley 1 10Y 5/1, Gley 2 10BG 5/1, 5B 5/1) from imperfect firing. Inclusions consist mainly of medium to large (0.5 to 3 mm) voids. Medium to large (0.5 to 4 mm) white inclusions are visible on coarse examples. The fabric is very similar to Ware 1

described above. The most characteristic feature of this ware is the red (2.5YR 4/6, 5/6, 5/8, 5YR 5/6, 10R 4/6) slip that coats the surface of the sherds which is thicker and crackles less. As in Ware 1, some examples seem to have two layers of slip, with a black (Gley 1 N 2.5/, N 3/) slip covering parts of the red slip below. In one particular case, the black slip on top forms a clear band across the rim and the purpose seems to be decorative. Moreover, the black slip is left matte and this makes a marked contrast with the highly burnished red slip below (Figure 5). Decoration also includes sets of deeply incised, horizontal parallel lines a centimetre or two below the rim. These are infilled



Figure 5. Black on red slip fragment.

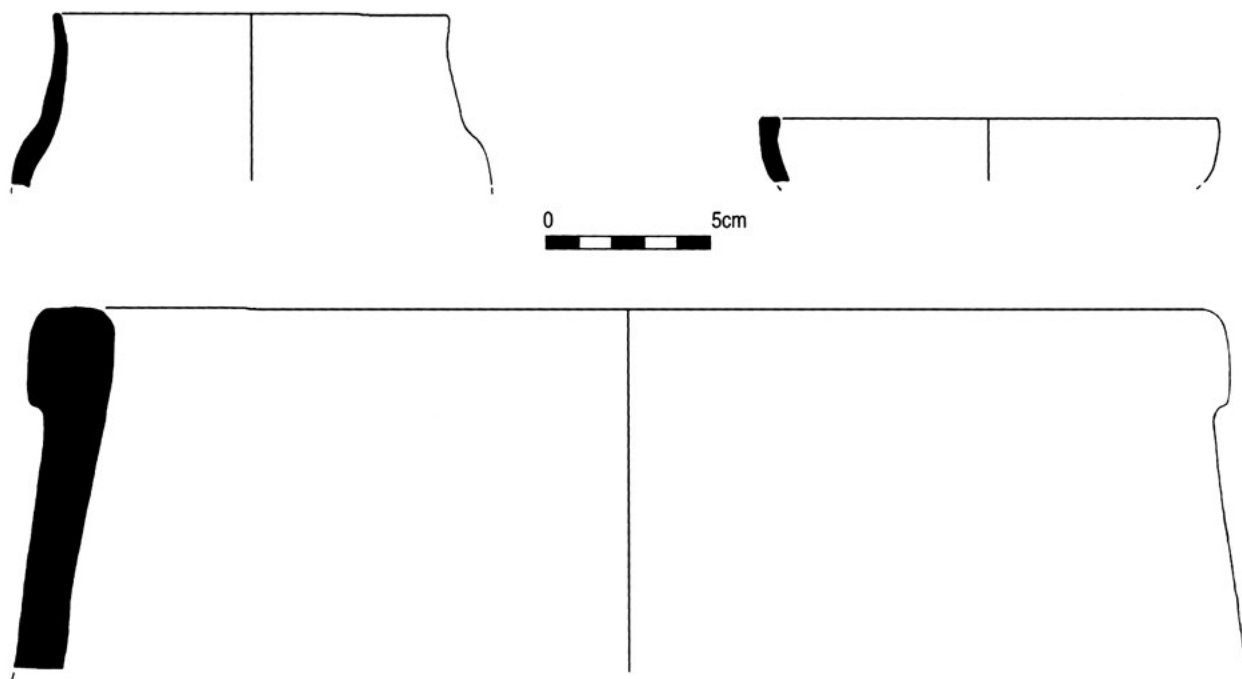


Figure 6. Examples of Ware 2
(drawing M. E. Zammit).

with a white paste. Other incised decoration includes triangles filled with horizontal parallel lines, infilled with a white paste. Some ribbed vessels also occur. Shapes include shallow and deep bowls, strainers and vessels with a rounded body and a slightly flaring rim (Figure 6).

Ware 3: Black Ware with cut-out geometric decoration

Dark grey to black fabric (Gley 1 N 2.5/, N 4/, N 5/) made from well-levigated clay. The surface is coated with a black (Gley 1 N 2.5/, 5Y 2.5/1) slip, which is highly burnished and decorated with geometric

designs. The fabric has some very well-sorted voids (0.5 to 2 mm). Larger voids are only present in coarse examples, together with a few white (0.5 to 1 mm) inclusions. Decoration consists of deeply cut-out lines infilled with a white paste, forming geometric designs such as meandering lines enclosing false-relief zigzags, concentric triangles and parallel lines. Shapes include shallow bowls with omphalos bases, carinated bowls, sometimes with a high-loop handle and deep bowls with narrowing necks (Figure 7). One sherd from a shallow bowl has a deep pouch on its interior, perhaps used instead of a handle (Figure 8).

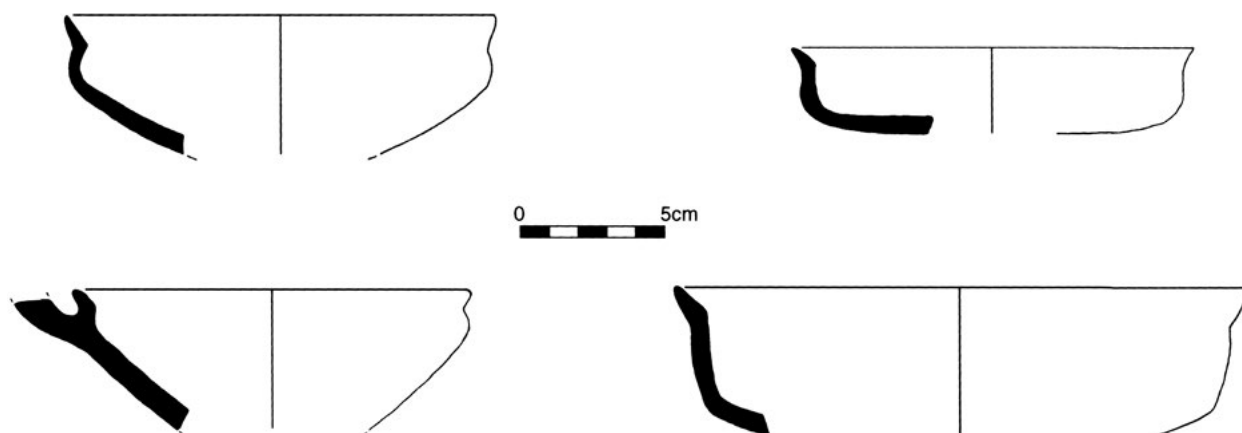


Figure 7. Examples of Ware 3
(drawing M. E. Zammit).



Figure 8. Shallow bowl with a pouch on its interior.

Ware 4: Handmade, coarse fabric with shell-like inclusions

A coarse, reddish yellow (5YR 6/6, 7/6, 10YR 5/2, 7/4, 2.5Y 8/3) fabric with a large number of white inclusions. The core is often dark grey (Gley 1 N 2.5/, N 3/, N 4/, 10Y 5/1) due to imperfect firing. Most of the fragments appear to be unslipped. A few exceptions have a pink (7.5YR 7/4) or red (10R 4/6) slip. Inclusions are large (0.5 to 6 mm), shell-like and poorly sorted. Large voids

(0.5 to 3 mm) also occur. Shapes include a medium-sized shallow dish, a deep bowl with a narrowing neck and a large vessel with a tall, slightly flaring neck and vertical handles (Figure 9).

Ware 5: Handmade coarse fabric with grog

A coarse fabric with grog (0.5 to 5 mm). Large (0.5 mm to 1 cm) voids also occur, making the fabric very friable. The colour is usually reddish yellow (5YR 6/6) throughout. A reddish yellow (7.5YR 7/6) slip usually covers the surface to make it smooth. In one example, the slip is red (10R 4/6). There are very few examples of this ware, and the only shape that could be identified is a deep bowl with a horizontal lug handle (Figure 10).

Ware 6: Coarse fabric with grass/straw inclusions

A handful of thick-walled, light brown (7.5YR 6/4) sherds with elongated inclusions. Core is dark grey (5Y 4/1, Gley 2 10G 4/1) from imperfect firing and edges are highly eroded. One example has faint traces of a thin, dark red slip (10R 3/6). Voids are of two types – 0.5 to 3 mm rounded and well-sorted voids, and 0.5 mm to 1.5 cm elongated voids that seem to be limited to the surface of the sherds.

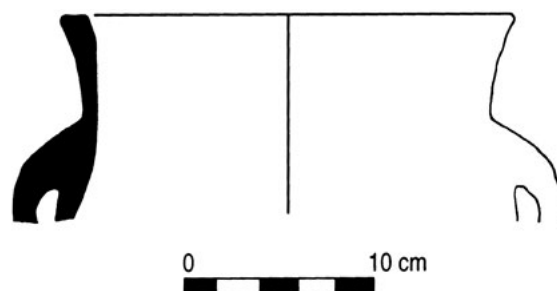
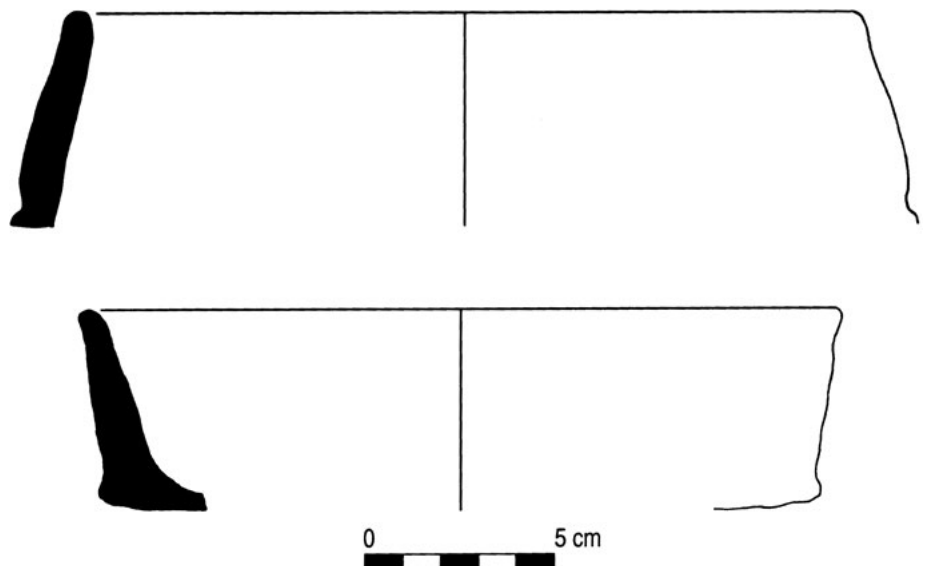


Figure 9. Examples of Ware 4 (drawing M. E. Zammit).



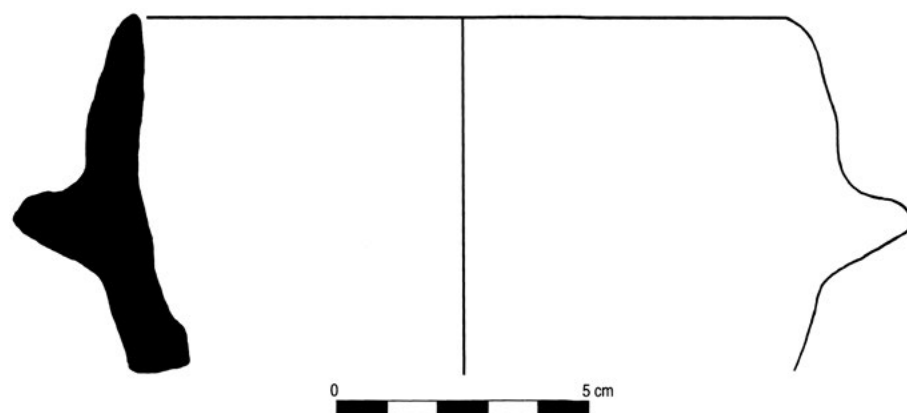


Figure 10. Example of Ware 5
(drawing M. E. Zammit).

4.3.1 Discussion

Wares 1 and 2 can be easily identified with Evans' handmade, buff ware assigned to the Borġ in-Nadur phase (Evans 1953, pp. 69-71; 1971, pp. 225-226). Based on the stratigraphy at the type site of Borġ in-Nadur, David Trump divides the phase into three (Trump 1961, pp. 258-259; 2002, pp. 272-273). He assigns the Borġ in-Nadur phase material that he excavated from il-Qlejgħa tal-Baħrija to his third and latest sub-phase of Borġ in-Nadur (II B 3) (Trump 1961, p. 259). Ware 1 corresponds to this material. Ware 2, however, corresponds to Trump's description of the first sub-phase of Borġ in-Nadur, that is II B 1. Although found in smaller numbers, this ware is also present among material from Baħrija hilltop and may therefore indicate an earlier occupation of the Qlejgħa hilltop. Ware 3 corresponds to Evans' Baħrija ware (Evans 1971, p. 227) and to Trump's II C 1 and II C 2 phases (Trump 1961, p. 259).

An interesting feature of the ceramic material from Baħrija is the use of two layers of slip on some of the examples from Wares 1 and 2. Some sherds (Ware 1) that seem to have a red or black mottled slip, have in fact, two layers of thin slip, black and red on top of each other. The practice of applying several coats of slip is not unknown, as this ensures better coverage of the vessel, especially when the slip is thin (Rice 1987, p. 151). The mottled effect, sometimes the result of irregular firing, is therefore in some cases created by applying two uneven coats of slip of different colour, creating differently coloured zones. In some examples, the purpose for applying two coats of slip seems to have been decorative. At Baħrija, therefore, a technique used to treat the surface of vessels perhaps to make them impermeable (see Rice 1987, pp. 231-232) is also used to decorate some of the vessels. It may be worth investigating whether this technique was used in a select number or all of the Borġ in-Nadur phase communities or whether it was restricted to Baħrija, and therefore being perhaps a particular technique used by a single potter or workshop.

Three groups of coarse wares (Wares 4, 5 and 6) were identified, albeit in very small numbers. In his 1971 publication, John Evans does refer to a 'coarse unslipped fabric' among the Borġ in-Nadur phase wares (Evans 1971, p. 226). This may have been a reference to Ware 4, as most fragments of this ware are unslipped. However, Evans does not indicate the presence of inclusions in his coarse ware. Ware 4 is the most common among the coarse wares, and a reference to it is made by Eric Peet in 1910, who notes that 'the clay is never entirely pure, and, especially in the larger vases, contains a considerable proportion of small fragments of quartz' (Peet 1910, p. 155). The large amount of shell or quartz inclusions in this ware make it very easy to identify, even when it is highly eroded. Some fragments were in fact also noted in the field survey. References to this ware suggest that at least some of the coarse material identified among the pottery from the 1909 and 1959 excavations belong to the Bronze Age. Fragments of Wares 5 and 6 make up a very small percentage of the material. The presence of elongated voids with striations in Ware 6 is interesting. These voids represent grass or straw (Orton and Tyres 1992, table A.2) and seem to be limited to the surface of the sherds, suggesting that matting was used during the production of the ware, leaving impressions on the surface. One fragment of a flat base of Ware 1 or 2 collected from the hilltop also shows imprints of grass or straw on its base.

A small group of sherds among the material from il-Qlejgħa tal-Baħrija do not belong to the Bronze Age, but can be dated to later periods. These sherds were probably retrieved during the 1959 excavation, as David Trump does note in his field diary the presence of 'a handful of Roman' sherds (Trump 1959-1969, p. 27).

4.4 Material Collected from the Field Walking Survey

Pottery sherds were not the only objects encountered during the survey (see Zammit 2006, appendix 1). Two lumps of chert and a worked chert tool together with a number of megaliths re-used within field boundary and

terrace walls may indicate an early occupation of the Qlejgħa hilltop. On the other hand, a coin found in one of the tracts indicate continued activity after the Bronze Age. The surfaces of the coin are however deteriorated and it could not be identified. Temi Zammit also obtained a number of coins from Qlejgħa fields in 1918, given to him by farmers. These included one 'Maltese coin (head & Egyptian deity?)', three Roman coins, two from the time of Grand Master Verdala (1582-1595) and one from the time of Grand Master de Rohan (1775-1797) (Zammit 1916-1921, p. 48) The last are indicative of the activity that may have been going on here in the Early Modern Period.

The material collected from the selected sample of 13 5 x 5 m squares was very fragmented. 29% of the material collected, in fact, was the size of a fingernail or smaller. This was the case even though the area chosen consisted of garigue landscape and therefore was not subjected to ploughing and agricultural activity. Moreover, the fragments were highly eroded and in most cases, the slip that once covered the sherd surfaces had almost completely flaked off. 93% of the sherds were also undiagnostic, making the identification of wares from the collected material very difficult. This was especially so in the case of Wares 1 and 2, which have similar fabrics but their surface is treated differently. Thus, these wares were grouped together during the identification of wares from the collected sample. Wares 4 and 5, on the other hand, could be identified fairly easily. Most of the material (72%) consisted of Wares 1 and 2, therefore dating to the Borġ in-Nadur phase, while material from Ware 3 (Baħrija phase) consisted of only 8% of the total material collected. This was unexpected, as 'Baħria' pottery had been found in 'enormous quantities' (MAR 1908-1909, p. 4) in the past, so much so that the site was visited occasionally to obtain this type of pottery for the museum collection. A lot of material of this type is in fact stored in the national collection. Was this ware found in such small numbers in the sample collected because visits to the site were made purposely to collect samples of it for the museum? Pottery fragments from the hilltop were also collected in the past to make *deffun* - a material used for roofing made from crushed pottery and lime. However, one would expect sherd pickers to collect any type of material and not only sherds from a single ware. Moreover, Margaret Murray notes that this type of ware was not preferred by *deffun* makers (Murray 1923, p. 33). A significant number of sherds (11%) do not belong to the Bronze Age or earlier periods. There seems to be much more post-Bronze Age material on the surface than David Trump's handful of 'Roman' sherds. If any future excavation work is undertaken on the Qlejgħa hilltop, particular attention should be given to these wares, which may be useful to help clarify the transition period between the late Bronze Age and later phases.

5. Conclusions

Cultural material on the Qlejgħa hilltop is not limited to areas which have been excavated. A number of megaliths re-used within field boundary walls together with other finds such as a chert tool may reflect earlier activity on the site. Most of the material recorded, however, has been dated to the Bronze Age. During the excavations, remains of *torba*, mudbrick and hearths were unearthed in one of the fields towards the centre of the plateau, together with a lot of ceramic material including a number of spindle whorls and loom weights. A thick sherd scatter covers the entire Qlejgħa plateau, with the highest concentrations located at the tip of the hilltop. The formation of such a scatter within a garigue environment may be the result of soil erosion, together with other factors such as the displacement of material by humans.

Three groups of rock-cut pits were also recorded on the southern side of the hilltop. Some of these pits are located within a surface quarry, indicating that quarrying activity was taking place before the pits were dug. Surface material on the Qlejgħa hilltop included pottery sherds post-dating the Bronze Age. This may indicate continued activity on the hilltop after the Bronze Age, even though the nature and extent of this activity remains unknown.

This study has confirmed that modern-day land use such as cultivation, hunting and trapping together with soil erosion are two factors that are affecting archaeological remains, especially surface scatters, to a great extent. Studies on land use and erosion and their effect on archaeological remains including surface scatters may result in valuable information that will help archaeologists interpret archaeological remains better.

In spite of weaknesses and limitations linked with field-walking surveys, such as shifting of soil, erosion, surface visibility, accessibility and human error, surface surveying is, in fact possible and useful within the Maltese context. The interpretation of archaeological remains is never easy and straightforward, and the processes that form and transform archaeological remains should always be given importance. Acknowledging the problems and limitations of studying surface scatters in the local landscape, should, if anything, result in an attempt to identify how these scatters came into being which will allow for a better interpretation of the remains.

References

- Bintliff, J., Snodgrass, A. 1988. Off-Site Pottery Distributions: A Regional and Interregional Perspective, *Current Anthropology* 29, pp. 506-513.

- Broodbak, C. 1999. Kythera Survey: Preliminary Report on the 1998 Season, *The Annual of the British School at Athens* 94, pp. 191-214.
- Buhagiar, K. 2002. *Medieval and Early Modern Cave-Settlements and Water Galleries in the North-West Malta South of the Great Fault – A Field Survey and Gazetteer*, M.A. Dissertation, University of Malta: unpublished.
- Cardona, D., Zammit, M.E. 2015. The Bronze Age settlement at il-Qlejgha tal-Bahrija, Malta: notes on the rock-cut features, in D. Tanasi, N. C. Vella (eds), *The late prehistory of Malta: essays on Borġ in-Nadur and other sites*, Oxford: Archaeopress, pp. 161-172.
- Cherry, J. F., Davis, J. L., Mantzourani, E., Whitelaw, T. 1991. The Survey Methods, in J. F. Cherry, J. L. Davis, E. Mantzourani (eds), *Landscape Archaeology as Long-Term History. Northern Keos in the Cycladic Islands from Earliest Settlement until Modern Times*, Los Angeles, California, pp. 13-35.
- Evans, J. D. 1953. The Prehistoric Culture-Sequence in the Maltese Archipelago, *Proceedings of the Prehistoric Society* 19, pp. 41-94.
- Evans, J. D. 1971. *The Prehistoric Antiquities of the Maltese Islands*. A Survey, London: Athlone.
- James, P. A., Mee, C. B., Taylor, G. J. 1994. Soil Erosion and the Archaeological Landscape of Methana, Greece, *Journal of Field Archaeology* 21.4, pp. 395-416.
- James, P., Atherton, M., Harvey, A., Firmin, A., Morrow, A. 1997. The physical environment of Methana, in Mee, C., Forbes, H. (eds), *A rough and Rocky Place. The Landscape and Settlement History of the Methana Peninsula, Greece: results of the Methana Survey Project*, Liverpool: University Press, pp. 5-32.
- MAR 1909-1910. *Annual Report on the Working of the Museums Department, Malta*, Government Printing Office.
- MAR 1913-1914. *Annual Report on the Working of the Museums Department, Malta*, Government Printing Office.
- MAR 1927-28. *Annual Report on the Working of the Museums Department, Malta*, Government Printing Office.
- MAR 1959-60. *Annual Report on the Working of the Museums Department, Malta*, Government Printing Office.
- Murray, M. A. 1923. *Excavations in Malta Part I*, London: Quaritch.
- Murray, M. A. 1929. *Excavations in Malta Part II*, London: Quaritch.
- Orton, C., Tyres, P., Vince, A. 1992. *Pottery in Archaeology*, Cambridge: University Press.
- Pedley, M., Hughes Clarke, M., Galea, P. 2002. *Limestone Isles in a Crystal Sea. The Geology of the Maltese Islands*, Malta: Publishers Enterprises Group.
- Peet, T. E. 1910. Contributions to the Study of the Prehistoric Period in Malta, in *Papers of the British School at Rome* 5.3, pp. 141-163.
- Schembri, P. J. 1993. Physical Geography and Ecology of the Maltese Islands: A Brief Overview, *Options Méditerranées*, Ser. B/No 7 (Malta: Food, Agriculture, Fisheries and the Environment, pp. 27-392.
- Taylor, J. 2000. Cultural Depositional Processes and Post-Depositional Problems, in R. Francovich and H. Patterson (eds), *Extracting Meaning from Ploughsoil Assemblages*, Oxford: Oxbow Books, pp. 16-26.
- Trump, D. H. 1958-1961. *Field Notes Malta*, unpublished manuscript, National Museum of Archaeology, Malta.
- Trump, D. H. 1959-1960. *Excavation Notes, January 1959-June 1960 Vol. 1*, unpublished manuscript, National Museum of Archaeology, Malta.
- Trump, D. H. 1961. The Later Prehistory of Malta, *Proceedings of the Prehistoric Society* 26, pp. 253-262.
- Van Dommelen, P. 2000. Post Depositional Effects and Ceramic Analysis: Comment on Jeremy Taylor 'Depositional and Post-Depositional Effects on Ploughsoil Ceramic Assemblages', in R. Francovich, H. Patterson (eds), *Extracting Meaning from Ploughsoil Assemblages*, Oxford: Oxbow Books, pp. 27-28.
- Wettinger, G. 1982. Agriculture in Malta in the Late Middle Ages, *Proceedings of History Week* 1981, pp. 1-48.
- Zammit, M. E. 2006. *An Archaeological Survey of Bahrija*, M.A. dissertation, University of Malta: unpublished.
- Zammit, T. 1916-1921. *Archaeological Field Notes, Notebook No. 5*, unpublished manuscript, National Museum of Archaeology, Malta.
- Zinn, D. L. Anati, M. 1988. Malta: Appunti di Lavoro Sul Terreno (Estratto Dagli Appunti Del Prof. Anati), in *Missione a Malta: Ricerche e Studi Sulla Preistoria dell'Archipelago Maltese nel Contesto Mediterraneo*, A. Fradkin Anati, E. Anati (eds), Milano: Jaca Book, pp. 199-210.

Chapter 3.

Bronze and Iron Age pottery from the 1909 and 1959 excavations at Qlejgha tal-Bahrija

Davide Tanasi

1. Prehistoric pottery from Peet (1909) and Trump (1950) excavations: records and evidence from the National Museum of Archaeology of Valletta

In the summer of 2017, a new study of all the ceramic materials from Peet's (1909) and Trump's (1959) excavations at Qlejgha tal-Bahrija was carried at the National Museum of Archaeology of Valletta. Thirty-five objects were displayed in showcases and 1219 fragments or fragmentary vessels were kept in the storage in 10 numbered boxes (218, 219, 221, 222, 223, 224, 225, 226, 246, 'Exhibition'). Just 16 of them turned out to clearly come from Trump's excavation.

The materials presented different kinds of labelling systems. While findings from Trump's excavation were labelled according to their provenance, for example 'B.B3' = 'Bahrija trench B layer 3', those from Peet's fieldwork were catalogued and numbered by J. D. Evans at the turn of the 60s and 70s. A progressive numbered code 'B/P', standing for Bahrija/Pottery, was inked on every fragment, whereas the code could be used for a single piece or for a group of pieces of the same type. On certain fragments, the number after 'B/P' was covered by an 'X', likely indicating a mistake, but no new numbered code was added. In total, Evans identified and distinguished two groups of pieces tagged as 'B/P1-B/P180' and 'B/P 1001-1044'. A printed version of his

catalogue sheets are accessible at the Museum (Figure 1) and offers interesting information about the much better conditions in which the materials were when he studied them and about the technical terminology that was in use in the 70s with respect to the study of pottery. In some sheets and for some better-preserved pieces, the shape number of Evans' classification for Period IIB and IIC pottery was also offered (Evans 1953). However, during our analysis of the materials, it was possible to highlight that for some reason, Evans catalogued just part of the entire assemblage, disregarding the rest, which in some cases included remarkable pieces. In other cases he gave the same number to a group of materials that clearly did not belong to the same typological class. In the last decade, a smaller group of materials was selected for the current permanent exhibition on the Maltese Bronze Age at the National Museum of Archaeology and these were assigned a progressive number ranging between 2600 and 2799 (in one case also 4924).

The results of the typological study of the materials from Peet and Trump's excavations, presented here, will be used to address open issues such as technological features and chronological frameworks of Bahrija pottery, its relationship with Borġ in-Nadur production, and the cultural significance and distribution of Bahrija's distinctive ceramics. Data

Object:	Provenance:	Date:	Cat. No.:
Jug, fragment.	Bahrija.	1908	B/P2
Description: Shape 118. Coarse gritty grey ware with black crackled slip, decayed in some parts, heavily encrusted elsewhere. Neck, lip and most of handle missing. Decoration, a double cut-out line encloses a panel covering the whole shoulder and the handle, its two ends being connected by a single line below the handle.		Measurements: Height surviving : 16.4 cms max. diam : 18.6 cms Base : 6.8 cms	
		Photo. No.	
		Drawing No.	
Conserved at:	Published in:	Survey:	
Valletta Museum.	PPS 1955, Pl.XIV,5.		

Object:	Provenance:	Date:	Cat. No.:
OPEN BOWL SHERDS	Bahrija	1909	B/P100
Description: Shape 111. 4 rim sherds of open bowls with small or vestigial splayed handles below the lip. One shows complete section to omphalos. Ware black, surface black, grey for red with traces of slip. 1) A triangle on the handle top; 2) a straight line across the handle's upper root; 3) a curved line in the same place; 4) short straight lines above and below the handle.		Measurements:	
		Photo. No.	
		Drawing No.	
Conserved at:	Published in:	Survey:	
VALLETTA MUSEUM.			

Figure 1. Evans' catalogue sheets of B/P2 and B/P 100, digitized by the National Museum of Archaeology.

deriving from archaeometric studies, carried out alongside the typological study, will also be used to tackle such critical themes see chapters 7, 8 and 9.

In the following section the materials will be discussed in chronological order, starting with the Borġ in-Nadur pottery from Peet's 1909 excavation, then the Baħrija pottery from the same excavation and finally all the materials from Trump's 1959 fieldwork, which represents a very minimal part of the entire group. Distinguishing the Borġ in-Nadur from the Baħrija ceramic production was certainly not an easy task, considering the total lack of context. The criteria used have been, on the one hand, the extensive study on Borġ in-Nadur pottery from the Borġ in-Nadur temple and settlement and the technological, decorative and typological distinctive features presented there (Tanasi 2011; 2015) and, on the other hand, the occurrence of specific characteristics (for example, carinated shapes, impressed decoration and labyrinthine decorative patterns, black burnished slip) that have been traditionally considered typical of Trump's Period IIC pottery (Evans 1971). A clear discernment was, obviously, not always possible especially considering the fragmentary condition of some classes and the scarce information available on them (pithoi, lids, strainers for example). It is therefore it is desirable that future studies, hopefully based on stratigraphic evidence, will be used to revise and correct eventual misclassifications done in good faith.

2. Bronze and Iron Age materials from Peet's excavation (1909)

Of the total of 1238 objects from Peet's excavation, 53 are clearly of Late Borġ in-Nadur type, 569 are of Baħrija-type and 616 are non-diagnostic due to their very small size or poor state of preservation.

2.1 Borġ in-Nadur pottery

Considering the extensive and non-stratigraphic method adopted by Peet during his 1909 fieldwork (see chapter 1), it is clearly almost impossible to infer any hypothesis about the sequence of the stratified deposit he excavated. However, the typological and

stylistic study of the materials has allowed us to isolate a group of ceramics which clearly show the typical traits of the Borġ in-Nadur type without any contamination from the distinctive features of Baħrija pottery. Although such group counts mostly fragmentary materials and rather limited in number, it is worth to discuss such evidence. Decoration and treatment of surfaces have been considered here as primary indicators to make a discrimination especially between Borġ in-Nadur and Baħrija productions, whereas the typology could offer real help just in few cases, due to the too fragmentary conditions of the materials.

Cups

With respect to cups, the fragmentary red-slipped example 100063-B/P108 (Figure 2) with thickened square-section rim is comparable with examples 37100 and 31014 from the settlement of Borġ in-Nadur (Tanasi 2015, p. 43), whereas the former comes from a Late Borġ in-Nadur context, the latter can be dated to a transitional phase between Classic and Late Borġ in-Nadur. In Evan's catalogue, it is classified as Shape 111 and consisting of three sherds, two of which could not ultimately be retrieved.

Examples 100115d and 100115e (Figures 3a-b, 5a-b), both with red slip at times marked by black blotches, closely recall cups of Type 1A identified at the Borġ in-Nadur settlement (Tanasi 2015, p. 42), while the undecorated cup fragment 100155g (Figures 3c, 5c) is comparable with Type 2A (Tanasi 2015, p. 42). A third smaller example of cup, 2720, (Figure 4) with bright red slip marked by black blotches, shows the typical linear cut-out decoration connected by impressed dots as in fragment BN/46a from Borġ in-Nadur temple (Tanasi 2011, pl. 12).

Example 100113 is possibly related to the Borġ in-Nadur phase (Figure 6), with an unusual typology, but the typical bright red slip with black blotches. The shape also recalls a piece from the Borġ in-Nadur temple (Tanasi 2011, pl. 29). Example 100115f is more problematic (Figure 7), with the typical bright, red, thick slip on pinkish body of the Classic Borġ in-Nadur type, which shows an unusual type of double lug handle.



Figure 2. Classic Borġ in-Nadur cup 100063 (B/P108).

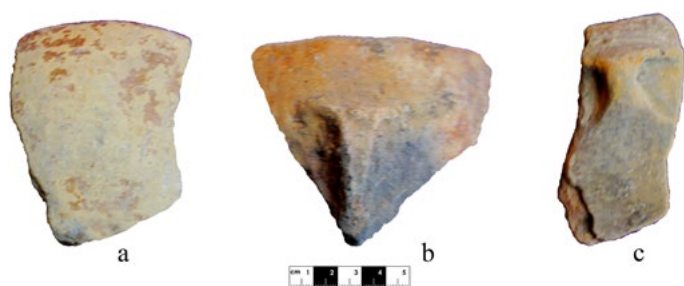


Figure 3. Borg in-Nadur cups, a) 100115d; b) 100115e; c) 100115g.

Figure 4. Borg in-Nadur cup 2720.

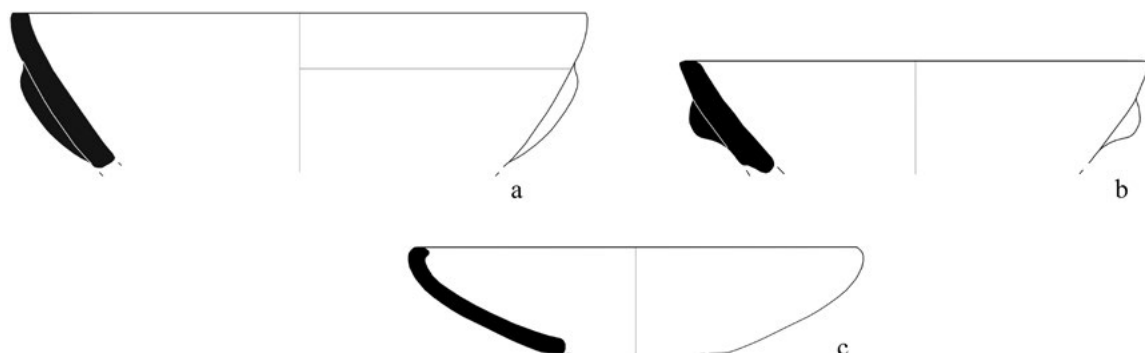


Figure 5. Borg in-Nadur cups, a) Type 1A 100115d; b) Type 1A 100115e; c) Type 2A 100115g.

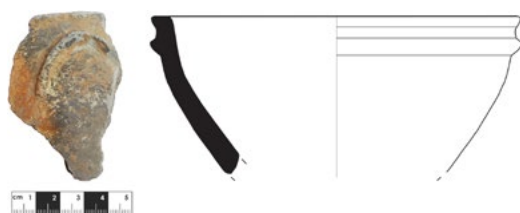


Figure 6. Cup 100113.

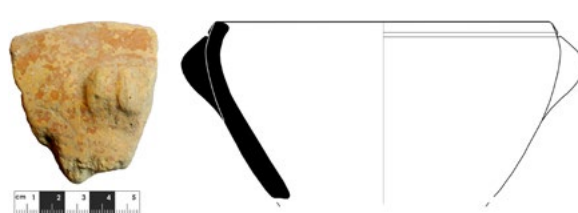


Figure 7. Cup 100115f.



Figure 8. Borg in-Nadur of Type 2A, 100115a.

Dipper Cups

The dark red-slipped fragment 100115a (Figure 8) belongs to a dipper cup with deep conical body and thinned, slightly in-turned, curved rim. The treatment of the surfaces and the decoration with a row of incised

horizontal lines recalls the Borg in-Nadur production, whereas the type is loosely comparable with Type 3 (Tanasi 2015, pp. 59-60). Typical Borg in-Nadur dipper cups are also indicated by two examples of axe-shaped handle termination (Figure 9a-b) corresponding to dipper cups of Type 1 (Tanasi 2015, p. 56) and one

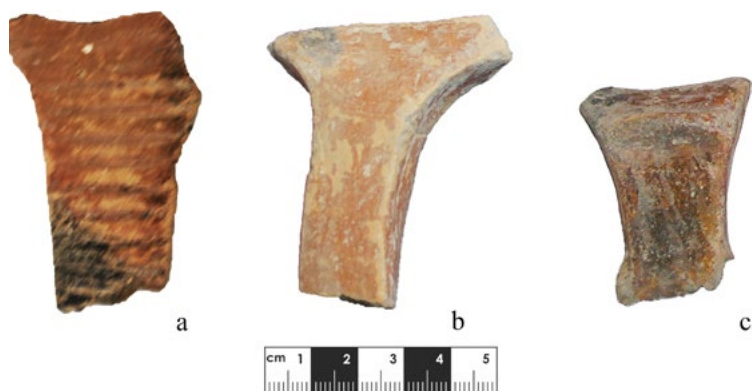


Figure 9. Borg in-Nadur dipper cups handles from Peet's excavation, a-b) axe-shaped handle terminations (2737, s.n.); c) catapult handle (100100a).

example of a catapult handle (or T-shaped) in bright red slip (Figure 9c), related to cups of Type 4 (Tanasi 2015, p. 56). While the former is more common for the Classic Borg in-Nadur type, the latter is largely attested in the Late Borg in-Nadur layers of the settlement at Borg in-Nadur. More examples of catapult and axe-shaped handles were also presented in Peet's excavation report (Peet 1910, pl. XV, 66, 68, 69, 72).

Amphorae

Amphorae are represented by one single dark brown-slipped example 100117b-B/P18 (Figure 10) which, from a typological standpoint, is between Type 1B and Type 1C (Tanasi 2015, pp. 50-51), both attested in the Late Borg in-Nadur repertoire. In Evans' catalogue, this piece is interpreted as his Shape 101, which is a juglet.



Figure 10: Fragment of Type 1B/1C amphora (100117).

Jugs

The only example of a jug is represented by B/P18 (Figure 11), interpreted in Evans's preliminary catalogue in the



Figure 11. Juglet B/P18.



Figure 12. Tubular spout B/P174.

in the archives of the National Museum of Archaeology as Shape 101 of his Classification (Evans 1953). It recalls jugs of Type 3 of the Borg in-Nadur repertoire (Tanasi 2015, pp. 50-51), although no precise comparison can be offered. To a spouted jug of some sort could belong the dark red-slipped tubular fragment of spout B/P174 (Figure 12).

To the same category, belongs the very specialized typology of the so-called strainer spouted jug, the origin of which has to be traced back to Late Bronze Age Sicily and from there to the Aegean and possibly the Levant (Leighton 1981). One example, B/P 178 (Figure 13), shows the typical thick red slip used to decorate the vessel typical of the Late Borg in-Nadur type, while the second example (Figure 14), found and published by Peet (1909, pls. 14.28, 14.32) presents an incised decoration with rows of lines. A good comparison for B/P 178 is example 2135/22 from Tas-Silġ South (Sagona 2015a, p. 23 figs 1:18, 6, 1:157,7). Considering that this



Figure 13. Strainer spouted jug B/P178.



Figure 14. Strainer spouted jug from Qlejgha tal-Bahrija (Peet 1909).

shape originated in Sicily, becoming one of the most distinctive shapes of the North Pantalica repertoire (Tanasi 2004), it offers some interesting chronological implications that will be discussed later.

Large storage Jars

The typological and chronological classification of the large storage jars is a rather complex and challenging task due to the almost total lack of evidence for this class of vessels in the Borġ in-Nadur repertoire (Tanasi 2011, pp. 126-128) and lack of references in the little that we know from more recent fieldwork at Qlejgha tal-Bahrija, as will be discussed below. Therefore, the choice of presenting the few known examples in this section must be taken with a pinch of salt. The examples in question (Figure 15), a rim (100090), a flat base (100088d), a fragment of mouth and neck (100087b) and five walls (100087c, 100087d, 100088a, 100088b, 100088c) shows a thickness ranging from 6 to 9 cm, testifying to the remarkable dimensional scale of these vessels. 100088a and 100088b present the dark red

slip of the Borġ in-Nadur pottery, while 100087d has a dark red slip marked by large black blotches. 100087c, 100088a, 100088b, 100088 are decorated with plastic bands of various thickness and arranged in curvilinear and geometric patterns.

Lids

Same caution has to be used for the classification of the lids, which, due to their large dimensions, were possibly related to the above-mentioned storage jars. The lack of distinctive typological features for the lids in question (Figures 16-17) makes the attempt to reconstruct their hypothetical evolution from the Borġ in-Nadur to the Bahrija repertoire very difficult. Examples 100083 and 4924, with flat body, rounded edges and massive surmounting handle, closely recall an example from the Late Borġ in-Nadur context of Mtarfa (Sagona 1999, p. 33, 38), while example 100048b, characterized by finger impressions along the perimeter is identifiable as Type 3B, attested at the Borġ in-Nadur settlement and Mtarfa (Tanasi 2015, p. 64-66). More unusual, with a slightly concave shape and thinned edges, appears to be 100048a.

Lamps

Lamps are represented only by example 2751 (Figure 18), which shows extensive traces of use. It is quite hard to say whether 2751 belongs to the Borġ in-Nadur or the Bahrija repertoire. Although it does not find any precise parallel in the Borġ in-Nadur production, it clearly recalls the lamps from Borġ in-Nadur temple and settlement (Tanasi 2015, pp. 67-68), suggesting that it would fit better in this period.

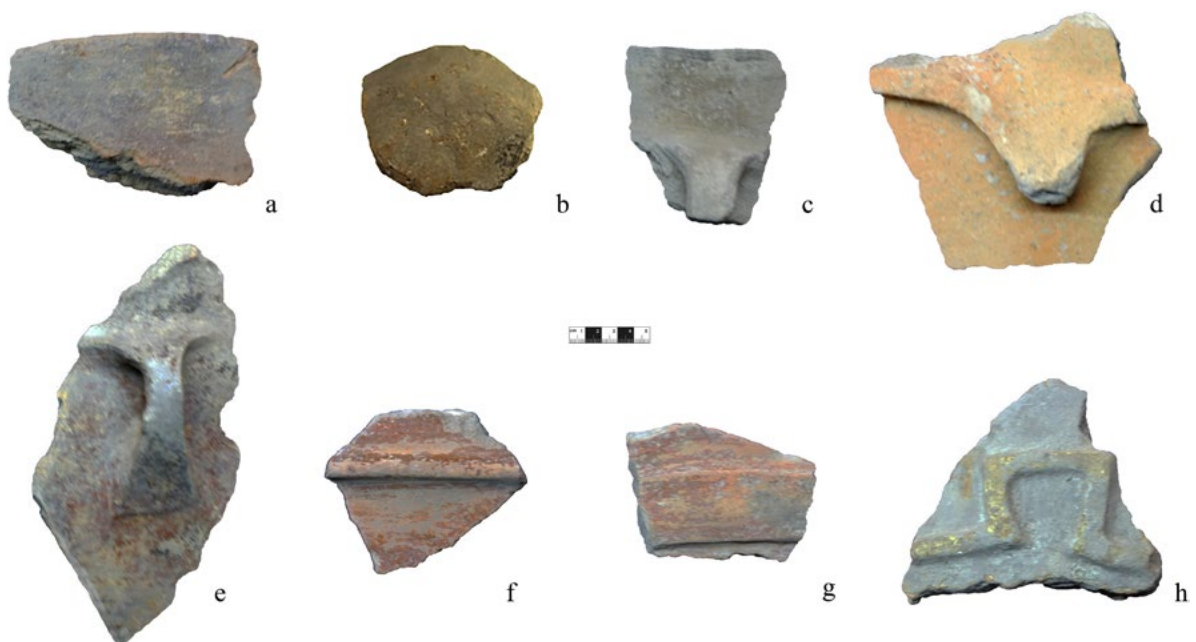


Figure 15. Fragments of large storage jars: a) 100090m, b) 100088d, c) 100087b, d) 100087c, e) 100087d, f) 100088a, g) 100088b, h) 100088c.

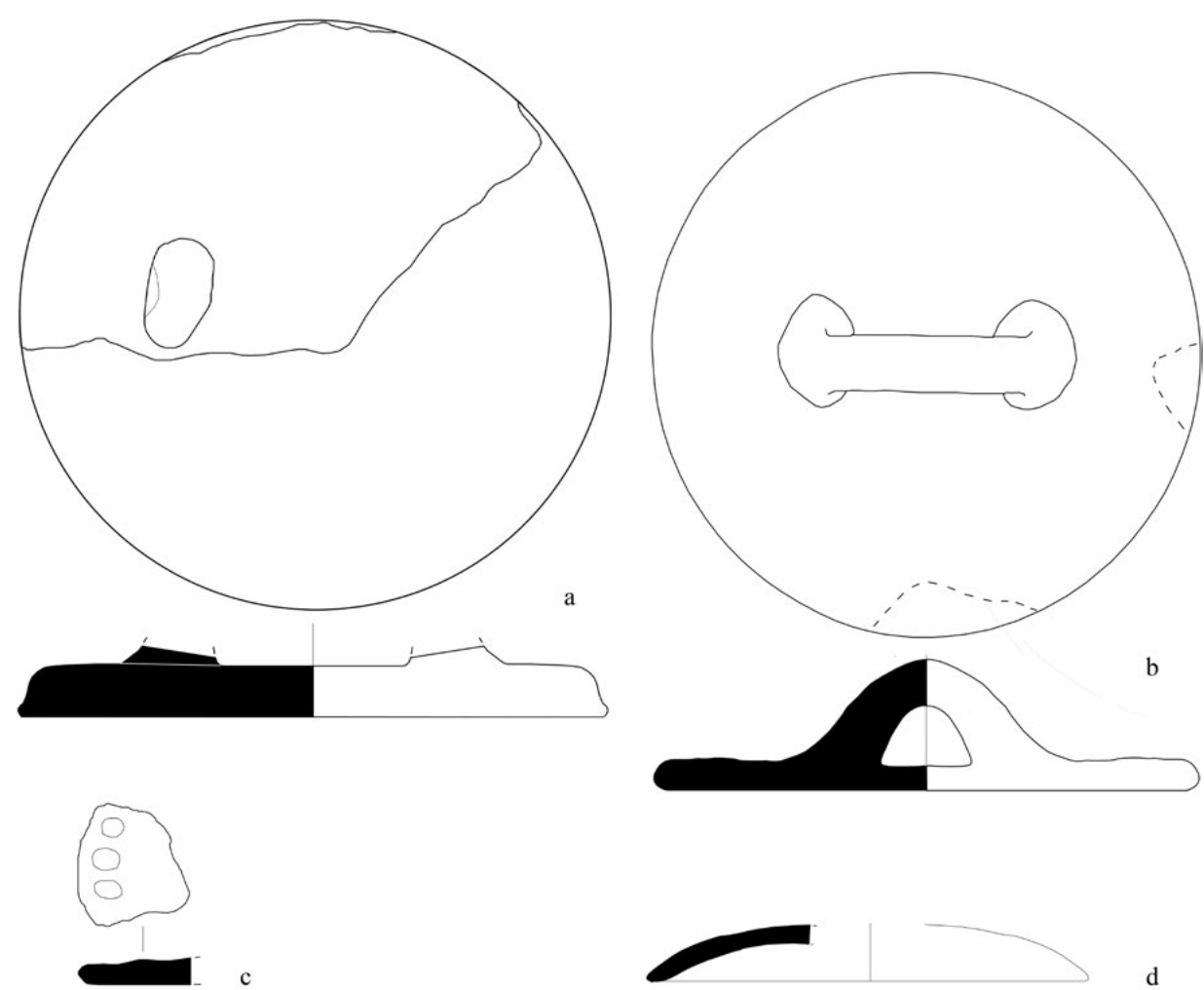


Figure 16. Lids: a) 100083, b) 4924, c) 100048b, d) 100048a.



Figure 17. Lids: a) 100083, b) 4924, c) 100048b, d) 100048a.

Figure 18. Lamp 2751.

*Decorative features*

With respect to distinctive decorative features, incised and at times lightly cut-out decoration appears on a group of wall fragments with distinctive bright red and brown slip. The motifs adopted are all rather popular in the Borġ in-Nadur repertoire as both incised and excised chevrons (Tanasi 2015, pp. 69-70) (Figure 19a-d), and triangles filled with horizontal lines at times in combination with series of multiple triangles (Figure 19e-h), as in the case of some Late Borġ in-Nadur examples from Mtarfa (Sagona 1999) and Tas-Silġ South (Sagona 2015a, p. 412, Figure 1:160,1) or of examples BN/P99a and BN/P99b from the Borġ in-Nadur temple (Tanasi 2011, pl. 18). More peculiar is a fragment with

bright red slip and a black blotch presenting a complex geometric motif imitating a honeycomb (Figure 19i) as well as another piece with poorly-executed multiple lozenge (Figure 19j).

Plastic decoration in the form of rope bands occurs in two pieces only (Figure 19k-l), one of them presenting a bright red slip. Rope bands with a circular section attached to the body before surface are typical of the Late Borġ in-Nadur type (Tanasi 2015, p. 73). Characteristic of the same type is also the presence of plastic pellets, isolated or in series and often times in combination with cut-out decoration, on jugs (Figure 20a-b), cups (Figure 20d), jars (Figure 20e-f) and dipper cups (Figure 20c, g).



Figure 19. Borġ in-Nadur decorated pottery from Peet's excavation, a-i) incised pottery (100104); j) incised pottery (100098); k-l) pottery with plastic rope bands (100104, 100096).



Figure 20. Borg in-Nadur pottery from Peet's excavation decorated with plastic pellets, a-b) jug handles 100098g and 100098i; c, g) Dipper cups 100057 and 100116i); d) Cup 100105c; e-f) Jars 100102a and 100102b.

Impressed decoration is represented by two examples only. Wall fragment 100103 (Figure 21a) shows the typical motif of the horizontal series of impressed dots which has been identified as typical of the Classic Borg in-Nadur period in Malta and Sicily (Tanasi 2015, p. 70). The second fragment B/P 206, with a peculiar dark red slip marked by a black blotch, presents an impressed pattern which could be interpreted as the print of a mat (Figure 21b), either intentional or accidental.

Examples of the so-called Painted Ware, recognized as peculiar for the Late Borg in-Nadur type, are represented



Figure 21. Borg in-Nadur pottery from Peet's excavation decorated with impressed motifs, a) 100103; b) B/P206.

by a bowl fragment (Tanasi 2013) (Figure 22) and an unusual wall fragment of a large open vessel equipped with a cylindrical spout. The latter vessel's interior is fully slipped in red, while on the outside it presents just a thick oblique band of red slip applied over the body (Figure 23). A decorative feature observable either on Dribbled Ware (Tanasi 2013) and Painted Ware (Tanasi 2015). Another example of Painted Ware, probably from Peet's excavation at Qlejgha tal-Bahrija, was also discussed by Evans (1953).

Figure 22. Dipper cup fragment belonging to the Painted Ware class from Qlejgha tal-Bahrija (Tanasi 2013).



3.2 Bahrija pottery

A first attempt to classify the Bahrija pottery was offered by Evans, who presented a set of 'chief pottery shapes' for this production in his work on the prehistoric culture sequence of the Maltese Archipelago (Evans 1953). Evans describes it as superior in quality in comparison with the previous Borg in-Nadur production, as he finds

Figure 23. Fragment of a spouted, open vessel belonging to the Painted Ware class (100108).



POTTERY-SHAPES — PERIOD IIc		
112	113	114
115	116	117
118	119	120

Figure 24. Chief shapes of the Bahrija pottery (Evans 1953).

it better fired and crafted and with darker surfaces, and names it *Late Cut-Out Ware II*, defining the period of its production (12th-8th c. AD) as *Period IIc*. Twelve main pottery typologies are identified, including bowls, cups, lamps and other open shapes. He identifies the main types in particular as bowls (form 109 and 11), angular bowls – also described by Peet as ladles – (form 114 and 112), jugs (forms 118 and 119), dishes (form 115) and conical cups (form 116) (Figure 24). In his later seminal monograph, discussing the Bahrija pottery, Evans also adds to the list of most significant shapes a globular jar, a rectangular box-like vase, ‘cheese-strainers’ and a lamp (Evans 1971).

In 2006 a reappraisal of the pottery from Qlejgha tal-Bahrija was attempted by Maria Elena Zammit, who, on the basis of the knowledge of that time and focusing on the technological aspects of the production, identified six main ware groups, associating with each group the most popular shape typology (see chapter 2).

The reappraisal of the ceramic assemblage from Peet’s excavation, carried out in the summer of 2017, brought

to our attention a large quantity of fragments and a larger repertoire of shapes and typological categories. Leaving aside the 616 non-diagnostic ones, this study will focus on those showing more relevant features.

3.2.1 Pottery typology

Three main categories of shapes can be distinguished: Open, Closed and Special: those shapes which cannot be assigned to the other two categories are grouped in the latter.

OPEN SHAPES

– Cups

Cups with simple base or pedestal are the most popular shapes in the Bahrija repertoire. With respect to size and specifically diameter of the mouth, they range between 37 and 10 cm, with a common standard of 15-18 cm. On the basis of features from the rim and shape of the body, it is possible to distinguish four main categories (I, II, III, IV), whereas I and III can be subdivided in

further typological groups (IA1, IA2, IB1, IB2, IIIA, IIIB1, IIIB2) presented as a separate category, miniature cups will be though it does not really constitute a separate typological group considering the limited number of examples, and the so-called Grey Ware cups discussed below in detail. Fifty-one fragments of rims belonging to cups with cut-out and impressed decoration (100044) and 31 more undecorated fragments (100045) are not discussed in this section as they were considered too small and non-diagnostic, but still relevant in terms of total counts of examples.

– **Type IA1** (Figure 25): rounded straight rim, conical body; symmetrical couple with vertical strap handles usually set on the upper body. Example 2720 presents an unusual flared profile. With 20 cm of mouth diameter, 2720 is the largest of this group whereas 100038c is the smallest with 12.5 cm.

– **Type IA2** (Figure 26): rounded straight rim lightly curved inward, hemispherical body; possibly pedestalled as 100041k, 100038m and 100038j seem to suggest. The latter also presents a rather unusual

shallow body. Rims can at times be slightly thinned as in 100036e.

– **Type IB1** (Figure 27): rounded lightly curved inward rim, conical body.

– **Type IB2** (Figure 28): rounded rim lightly curved and sloped inward, conical body. Mouth diameter ranges between 14 cm (100041h) and 16 cm (2662). Cup 100042d shows a symmetrical couple of lug handles by the rim.

– **Type II** (Figure 29): square-sectioned straight rim, deep conical body.

– **Type IIIA** (Figure 30): square-sectioned straight rim, hemispherical shallow or deep body; mouth diameter ranging from 16 to 24 cm.

– **Type IIIB1** (Figure 31): square-sectioned rim sloped inward, very deep conical body. Mouth diameter ranges between 8 cm (100038e) and 16 cm (100037a).

– **Type IIIB2** (Figure 32): square-sectioned rim sloped inward, hemispherical body; represented just by example 100040c showing 16.5 cm of mouth diameter.

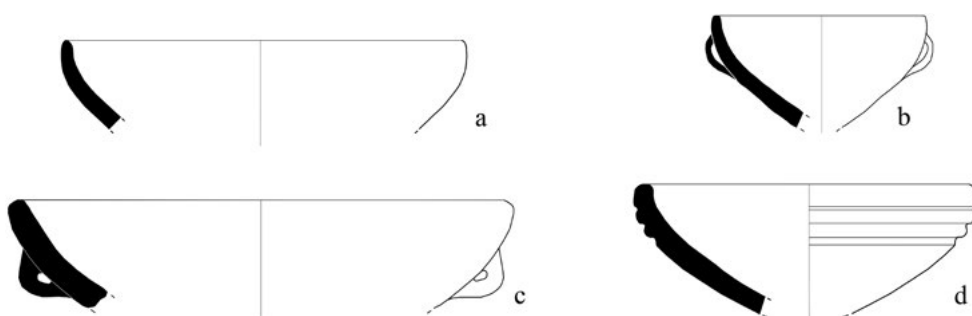


Figure 25. Cups of Type IA1: a) 100036b, b) 100038b, c) 2720, d) 100038c (drawing scale 1:3).

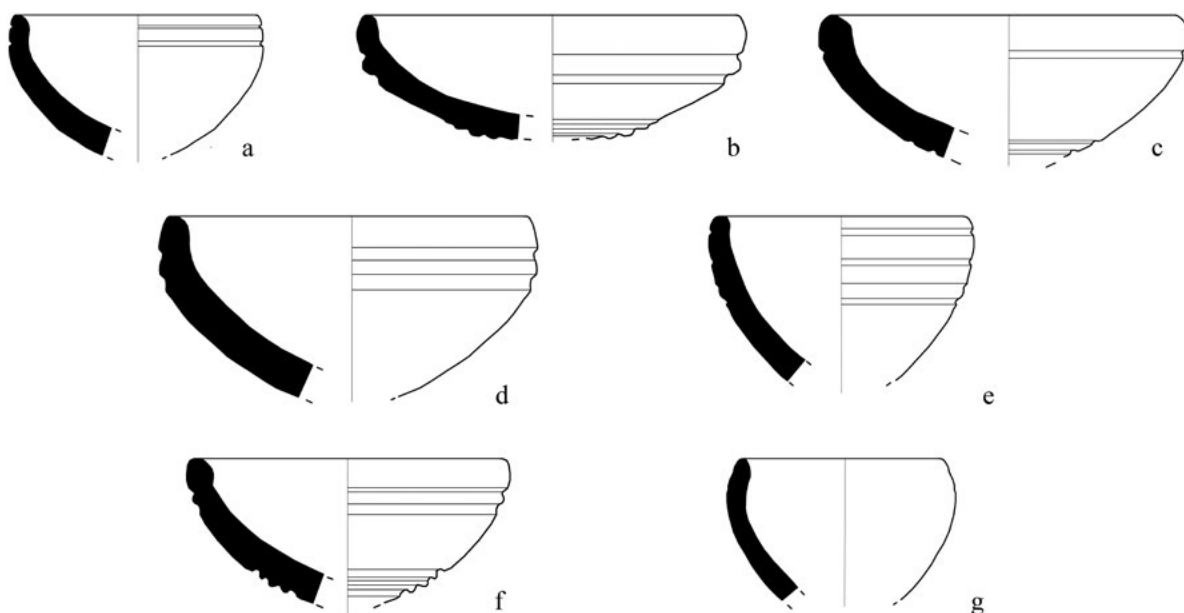


Figure 26. Cups of Type IA2: a) 100041a, b) 100038j, c) 100041k, d) 100040a, e) 100036f, f) 100038m, g) 100036e (drawing scale 1:2).

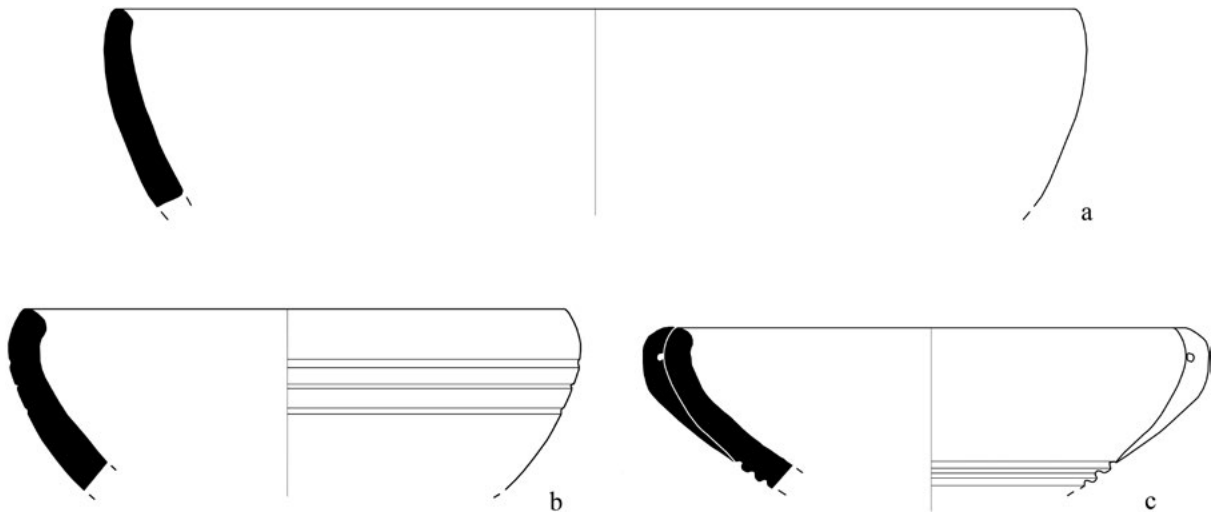


Figure 27. Cups of Type IB1: a) 100043d, b) 100040m, c) 2709 (drawing scale 1:2).

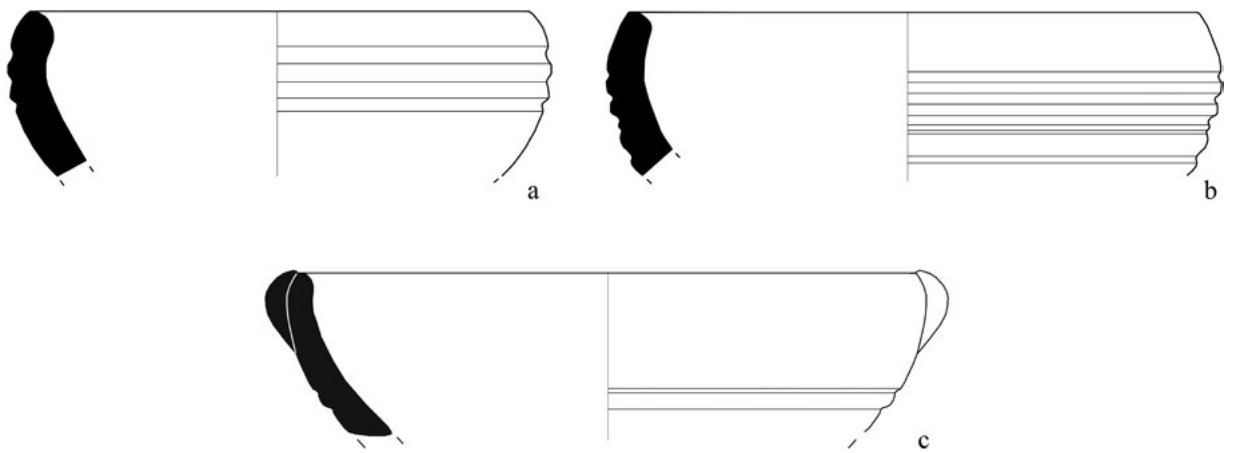


Figure 28. Cups of Type IB2: a) 100041h, b) 2662, c) 100042d (drawing scale 1:2).

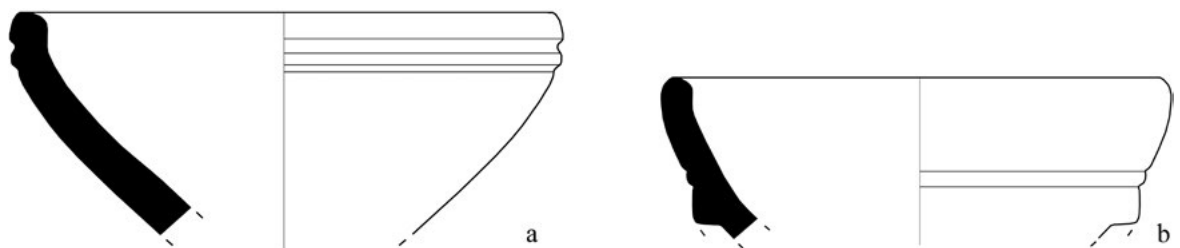


Figure 29. Cups of Type II: a) 100041d, b) 100038g (drawing scale 1:2).

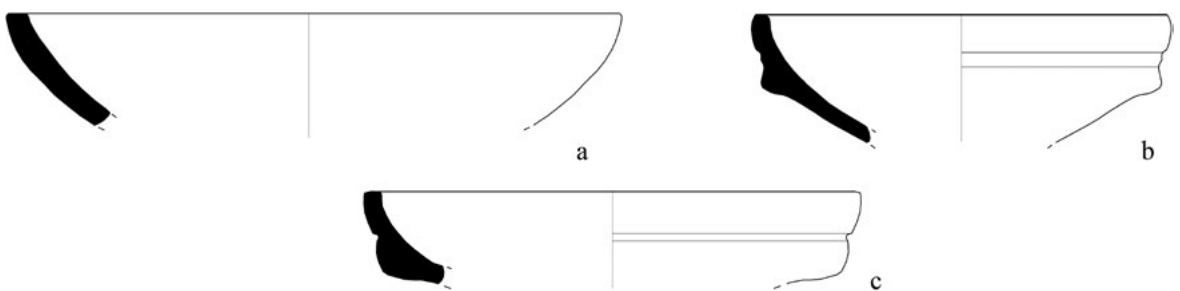


Figure 30. Cup of Type IIIA: a) 100043c, b) 100042l, c) 100042k (drawing scale 1:3).

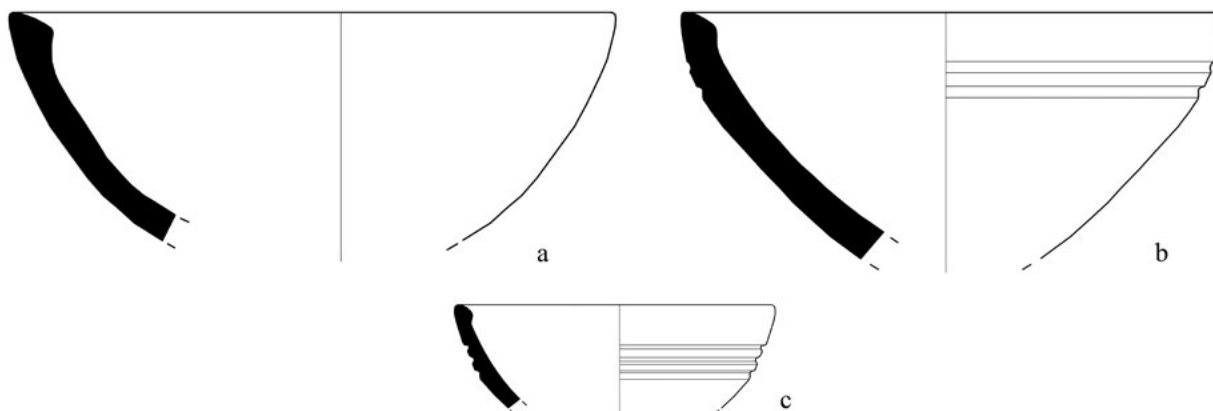


Figure 31. Cups of Type IIIB1: a) 100037a, b) 100040b, c) 100038e (drawing scale 1:2).



Figure 32. Cup of Type IIIB2: 100040c (drawing scale 1:2).

– **Type IV** (Figure 33): trapezoid-sectioned rim curved inward, deep conical body likely on pedestal, symmetrical couple of vertical strap handles, decorated with a cut-out horizontal groove above the upper attachment of the handles; represented just by example 100042j with a mouth diameter of 14 cm.

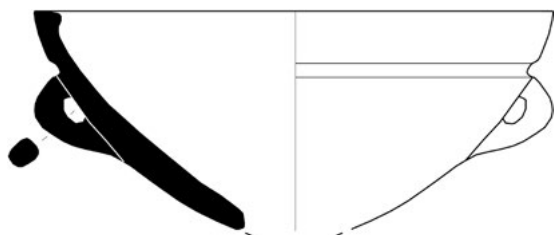


Figure 33. Cup of Type IV: 100042j (drawing scale 1:2).

– Miniature cups

Within this category are various types of cups with a mouth diameter of a maximum of 8-10 cm with unique typological features. Example 2716 shows a deep carinated body with a square-sectioned rim (Figure 34) while cup 100049 has a deep conical body with rounded rim and a triangular appendix with square section edges protruding from the rim (Figure 35). Cup 4903 shows a deep carinated body with a thinned rim and a miniature horizontal loop handle set upon the rim itself (Figure 36).

Two examples share the same typology: 4908 (Figure 37) and 100042b (Figure 38), with deep conical body,



Figure 34. Miniature cup 2716.

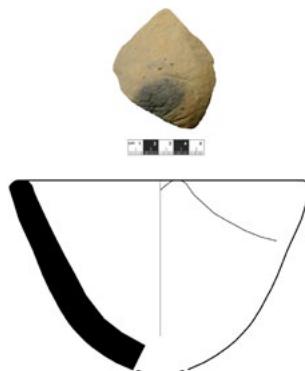


Figure 35. Miniature cup 100049.

Figure 36. Miniature cup 4903.

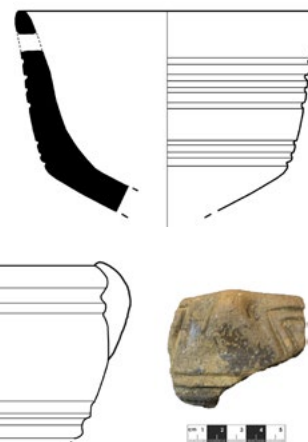


Figure 37. Miniature cup 4908.



Figure 38. Miniature cup 100042b.

rounded rim curved outward and thick lug handles, the top of which is decorated with a cut-out motif with multiple angles.

– Grey Ware cups

This category of cups, henceforth Grey Ware, deserves to be discussed separately in consideration of certain technological and stylistic features rather than their typological ones. Such cups present a very fine fabric with smoothed grey surfaces at times covered with dark brown/grayish slip and a typical decoration with curvilinear plastic rope bands creating a non-functional lug handle. The fabric at times presents peculiar blackish grits which, initially considered as volcanic in origin, led to the hypothesis that this class could be a Sicilian import. Such a hypothesis was also supported by the analogy of certain shapes of this category with the production of the Sicilian Middle Bronze Age Thapsos cups (Tanasi 2008). However, the petrographic and chemical analyses conducted on these same specimens (see chapter 8) have excluded a foreign production. With respect to the typology, Grey Ware cups appear to have an embossed base and frequently

a carinated body with profiles curved inward, though a certain variety of features occur.

Eight examples of cups with conical bodies, straight rounded rims and plastic decoration with curvilinear rope bands, dark chalky fabric with a reddish-yellow core and medium-large grits and mottled red slip inside and out come from the Late Borg in-Nadur context of the Mtarfa pit (Sagona 1999, p. 55, catalogue no. P12; Tanasi 2015). Similar examples were also recorded at Tas-Silg South (Sagona 2015a, pp. 34, 413, Figure 1:161) and Borg in-Nadur temple (Tanasi 2011, pp. 96-97, 104, 108). The Grey Ware cups discussed here appear to be a further technological and typological evolution of those Late Borg in-Nadur examples that better align with the standard of the Bahrija production. The explanation for the fact that such Bahrija iterations of the cups with plastic rope bands does not show the other typical traits of the Bahrija-type, such as the dark brown/black burnished slip and the impressed and cut-out decoration, can be explained with arguments pertaining to ritual matters, which obviously cannot be fully addressed for lack of context. More data about the chronological framework of these Grey Ware cups will be added to this discussion below when materials from the Trump 1959 will be presented (see *infra*). 100061a (Figures 39a, 41) is the only example with a complete profile and it likely shared the same typological features with 100061b (Figures 39b, 41), B/P101a (Figure 40) and B/P101b (Figure 40). Examples 100061c (Figures 39c,

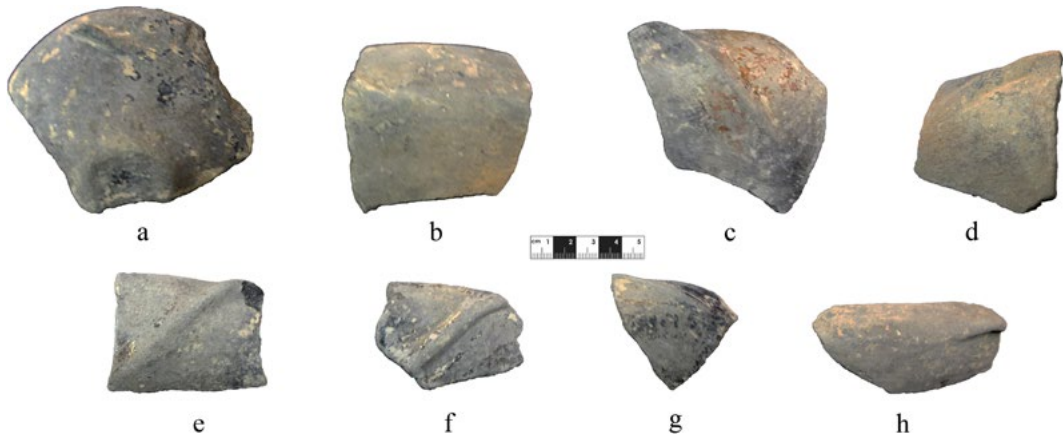


Figure 39. Grey Ware cups a-g) 10061a-g, h) 10061 j.



Figure 40. Grey Ware cups a) 2748, b) B/P101a, c) B/P101b, d) B/P101c.

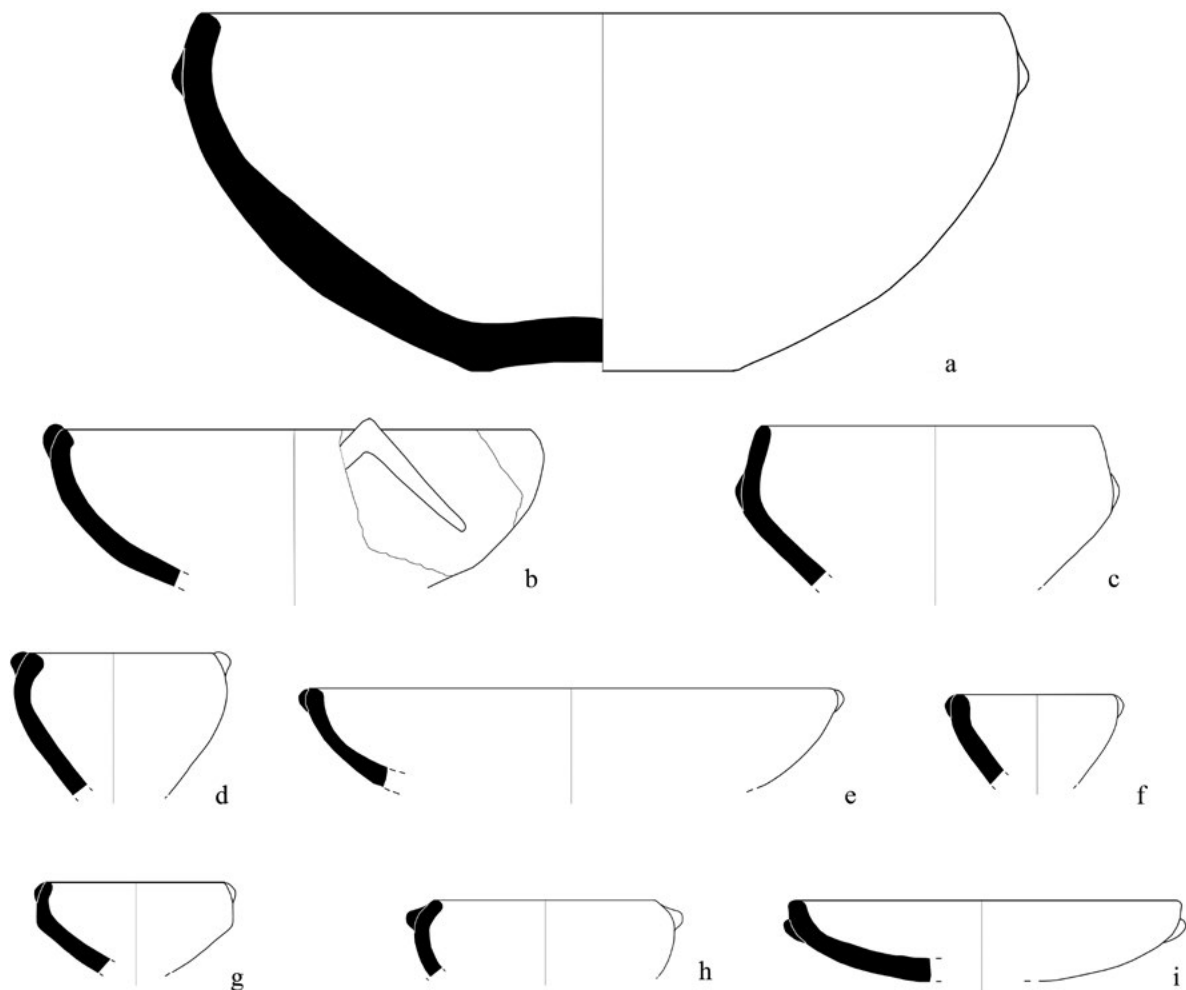


Figure 41. Grey Ware cups: a-g) 100061a-g, h) 100061j, i) 2748 (drawing scale 1:3).



Figure 42. a) Grey Ware conical pedestals: a-c) 100116a-c, d-h) 100116e-i; i) embossed base 100060c.

41), 100061g (Figures 39g, 41) and B/P1010c (Figure 40) show the same sharply carinated body and are possibly pedestalled, just like 100016d (Figures 39d,

41), 100061j (Figures 39j, 41) and 100061f (Figures 39f, 41). 100061e (Figures 39e, 41) and 2748 (Figures 40, 41) present a shallower body.

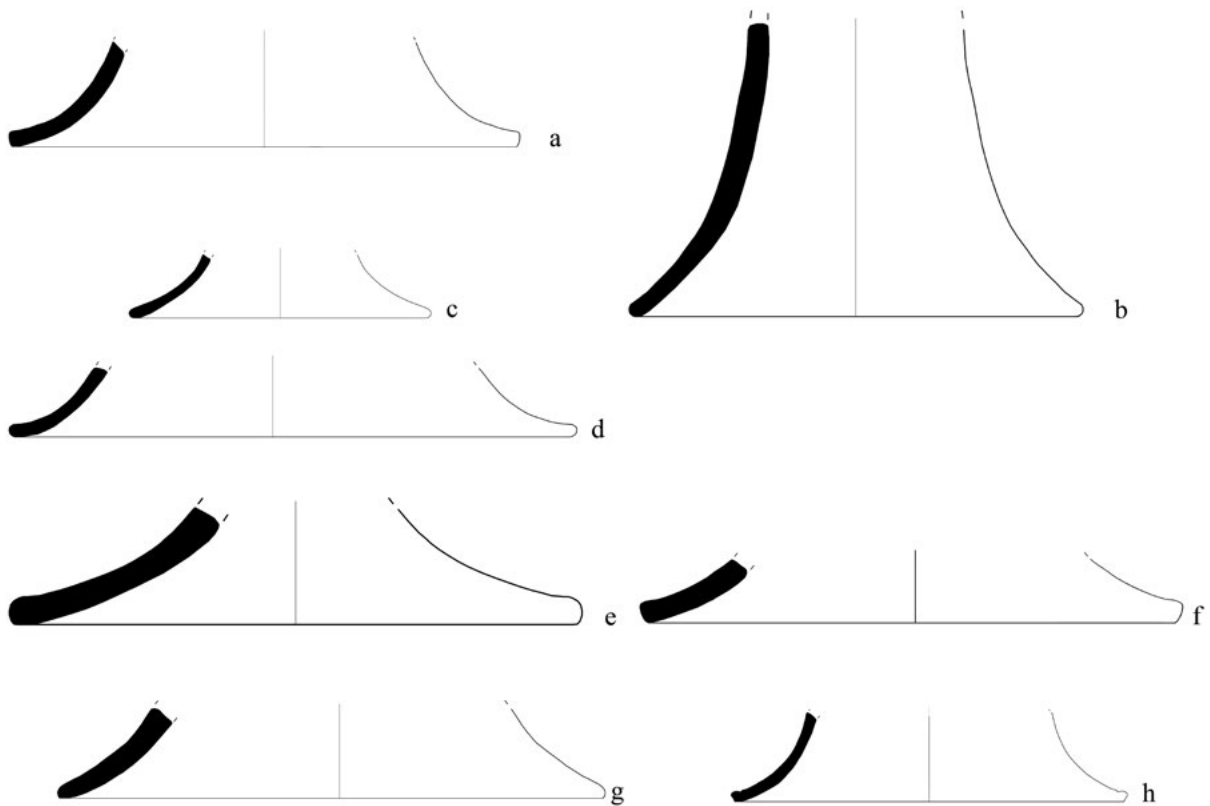


Figure 43. Grey Ware conical pedestals: a-c) 100116a-c, d-h) 100116e-i (drawing scale 1:4).

Possibly related with the Grey Ware cups is a group of conical pedestals sharing the same fabric and technical features (Figures 42, 43). It is noteworthy that example 100116f shows two clear repair holes. The embossed base 100060c (Figure 34b) seems comparable with cups 100061a.

– Basins

A mouth diameter above 25 cm is considered as distinguishing cups from basins. This class counts just five examples which belong to different typological groups. Other fragmentary and less diagnostic examples are represented by 100089, 100087a, 100085e.

– **Type I** (Figure 44): straight rounded rim, deep conical body, couple of non-functional miniature vertical strap handles by the rim; represented by example 2722 only with a mouth diameter of 28 cm.



Figure 44. Basin of Type I: 2722 (drawing scale 1:3).



Figure 45. Basin of Type II: 100043b (drawing scale 1:3).

– **Type II** (Figure 45): rounded, lightly curved inward rim, conical body; compatible with cups of type IB1; represented just by example 100043b with a mouth diameter of 26 cm.

– **Type III** (Figure 46): square-sectioned rim curved inward, squat hemispherical body; mouth diameter ranges from 30 to 37 cm.

– **Type IV** (Figure 47): angle-sectioned, straight rim, shallow hemispherical body, symmetrical couple of vertical strap handles, decorated with a cut-out horizontal row of grooves above the upper attachment of the handles, represented just by example 100421 with a mouth diameter of 30 cm.

– Dipper cups

Dipper cups are the most popular shape in the assemblage subject to this study with a high number of diagnostic examples.

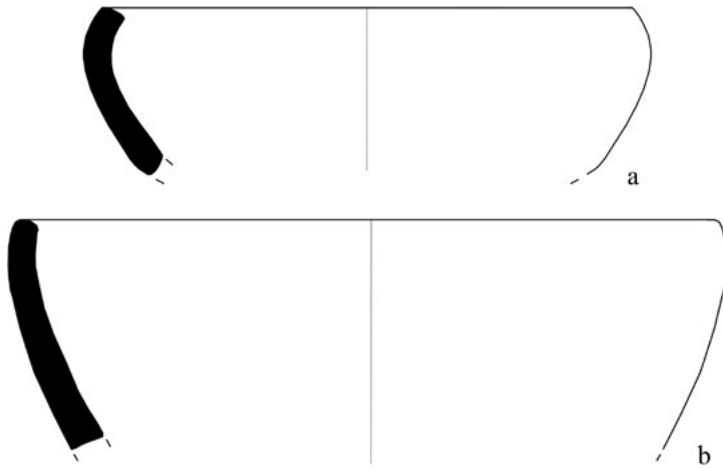


Figure 46. Basin of Type III: a) 100043e, b) 100043b (drawing scale 1:4).

– **Type IA1** (Figure 48): sharply carinated deep conical body, embossed or flat base, surmounting vertical strap handle between rim and maximum expansion, rounded rim curved outward, at times slightly thinned. A further typological distinction could be made for examples 100034e, 100030a, 100035b, which show a slightly convex profile. Example 2758, shows a non-functional vertical lug handle above the carinated lines, noted on better preserved pieces in symmetrical opposition to the vertical strap handle. Example 100035e shows a surmounting handle set vertically over the rim. The dimensional scale for this group ranges from a mouth diameter of 10 cm and a height of 5.5 cm to a mouth diameter of 18 cm and a height of 6 cm.

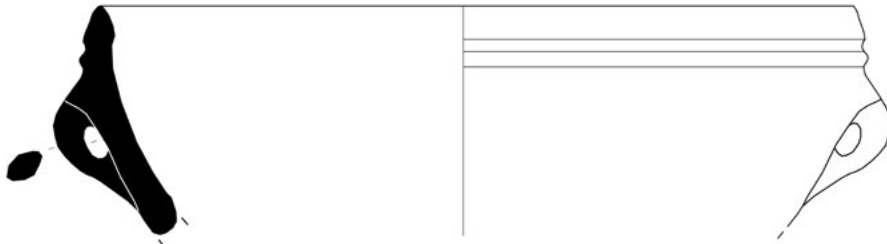


Figure 47. Basin of Type IV: 100042l (drawing scale 1:3).

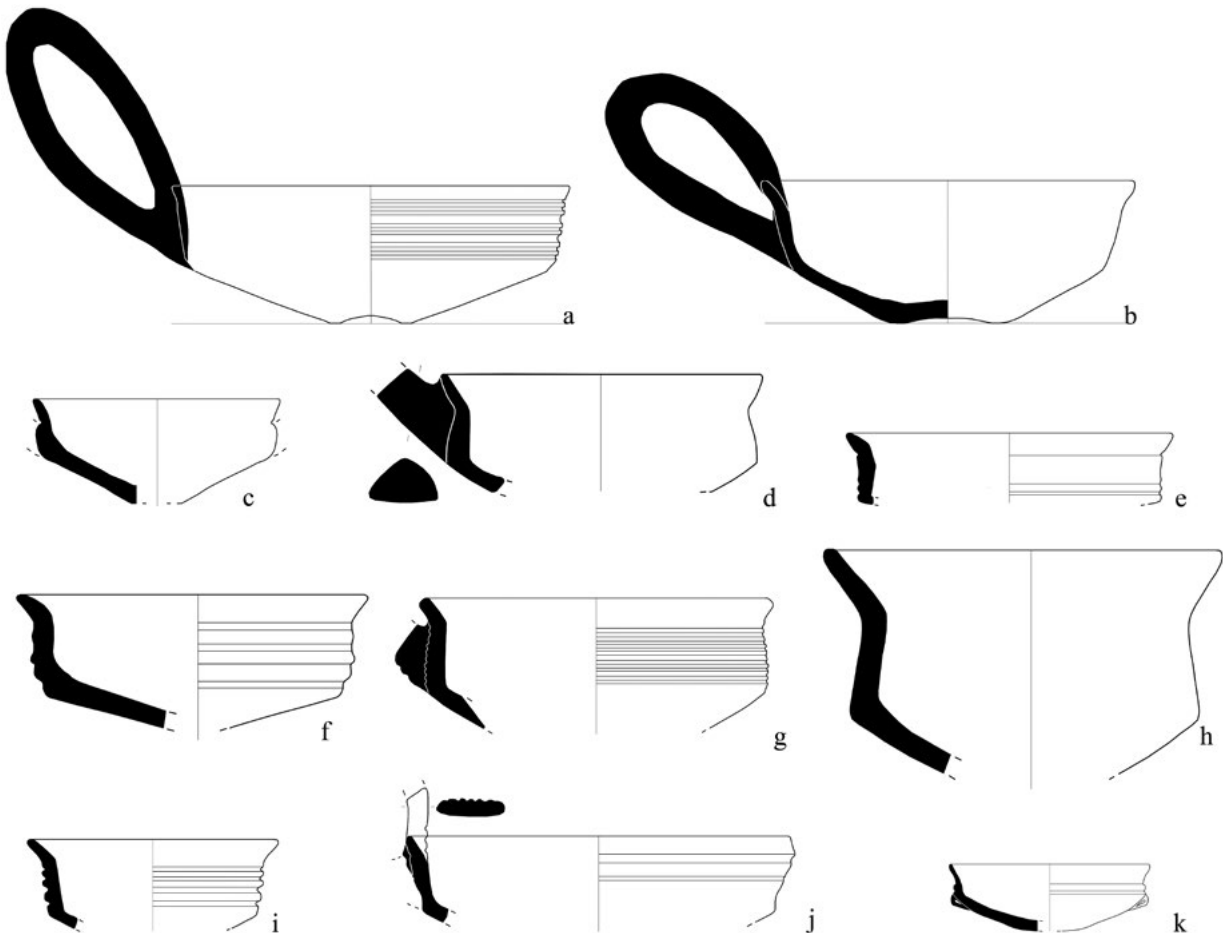


Figure 48. Dipper cups of Type IA1: a) 2746, b) 2745, c) 100031g, d) 100034e, e) 100032m, f) 2664, g) 100035b, h) 100030a, i) 100032k, j) 100035e, k) 2758 (drawing scale 1:3).

– **Type IA2** (Figures 49, 50): very similar to Type IA1. It differs by a shallower body. Examples in this group

also appear to have a larger diameter, around 20 cm, but much smaller height, around 4-5 cm.

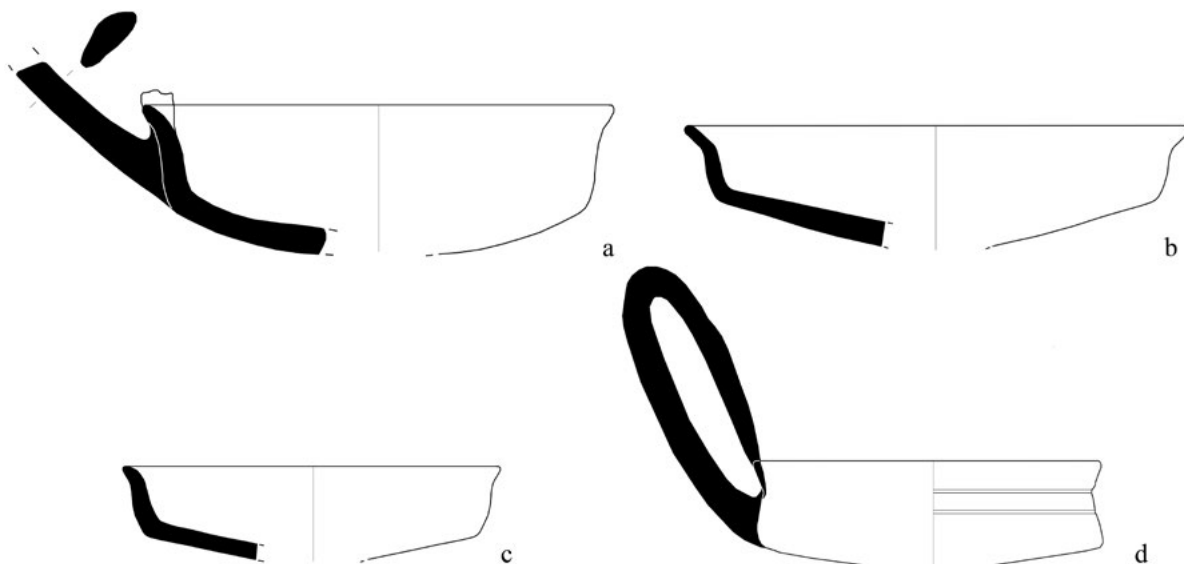


Figure 49. Dipper cups of Type IA2: a) 100035a, b) 100031a, c) 100031b, d) 2752 (drawing scale 1:3).



Figure 50. Dipper cups of Type IA1: a) 2746, b) 2745, c) 2758; Type IA2 d) 2752, e) detail of 2752, f) detail of 2746.

– **Type IB** (Figure 51): slightly carinated, deep conical body, likely embossed or flat base, surmounting vertical strap handle between rim and maximum expansion, rounded rim curved outward. Certain examples present a thinner rim, as 100032i and 100033f. Example 100032a

shows a squat body. Dimensional scale ranges from 8 to 21 cm of mouth diameter.

– **Type IIA** (Figure 52): globular body flattened near the base, rounded thinned rim curved outward, at times

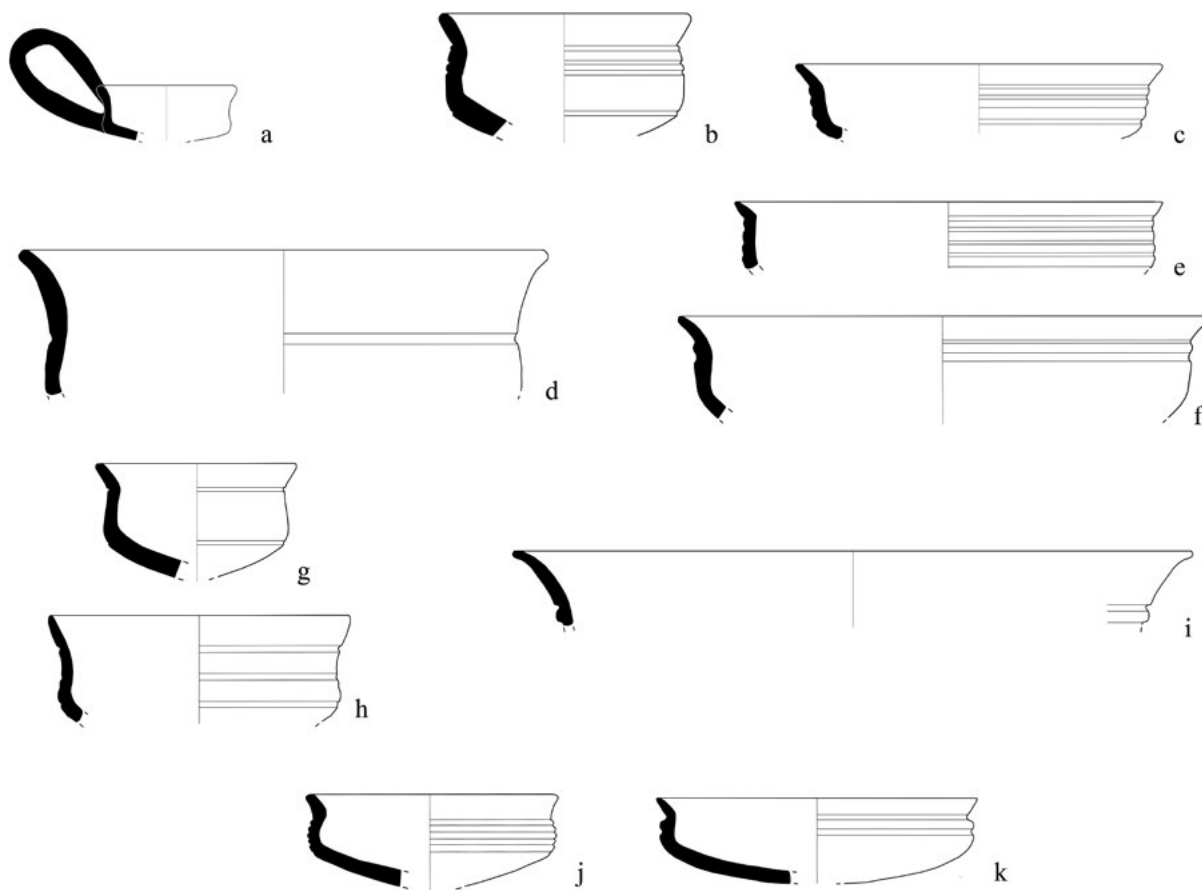


Figure 51. Dipper cups of Type IB1: a) 4901, b) 2661, c) 100032o, d) 100116l, e) 100032i, f) 100032j, g) 100034c, h) 100033f, i) 100032l, j) 100034b, k) 100032a (drawing scale 1:3).

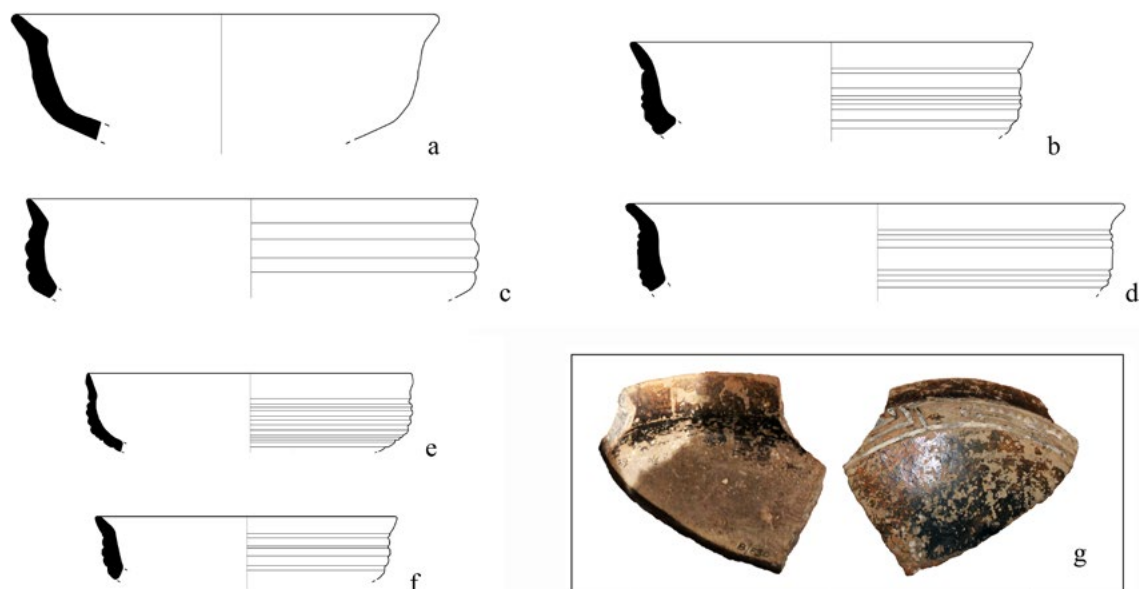


Figure 52. Dipper cups of Type IIA: a) 2756, b) 100033m, c) 100032g, d) 100033d, e) 100033l, f) 100033c, g) B/P30 (not to scale) (drawing scale 1:3).

sharply curved. Mouth diameter ranges from 11 to 20 cm.

– **Type IIB** (Figure 53): very similar to Type IIA, it differs by having a more squat body. Average mouth diameter is about 20 cm.

– **Type IIC** (Figure 54): very similar to Type IIA but with a more elongated body. Mouth diameter dimensions ranges from 12 to 22 cm (100032h) to 12 cm (100034l) with an average 14-15 cm.

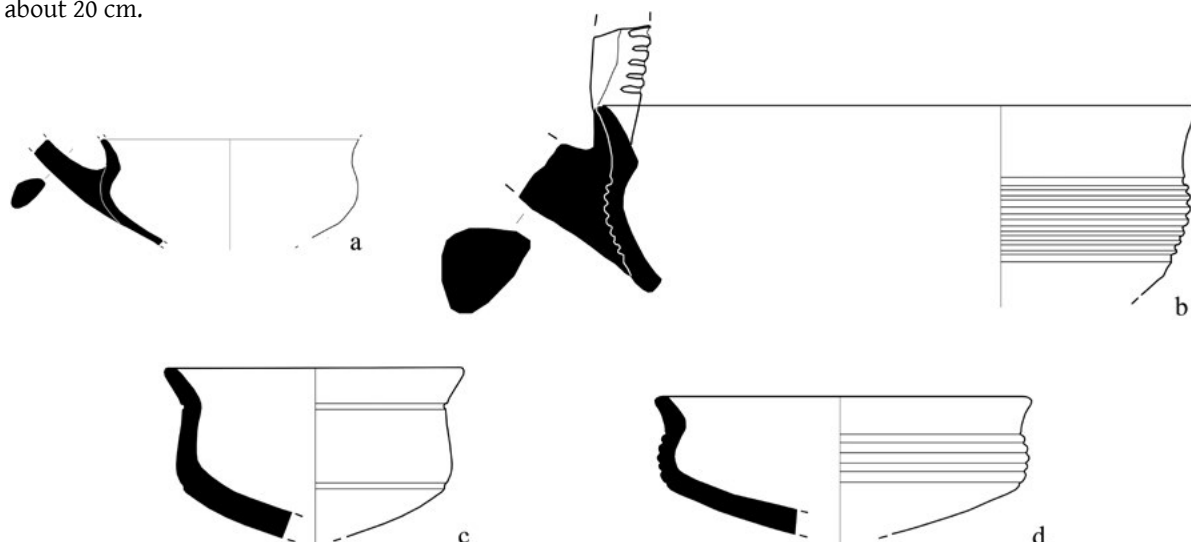


Figure 53. Dipper cups of Type IIB: a) 100035c, b) 100035d, c) 100034c, d) 100034b (drawing scale 1:2).

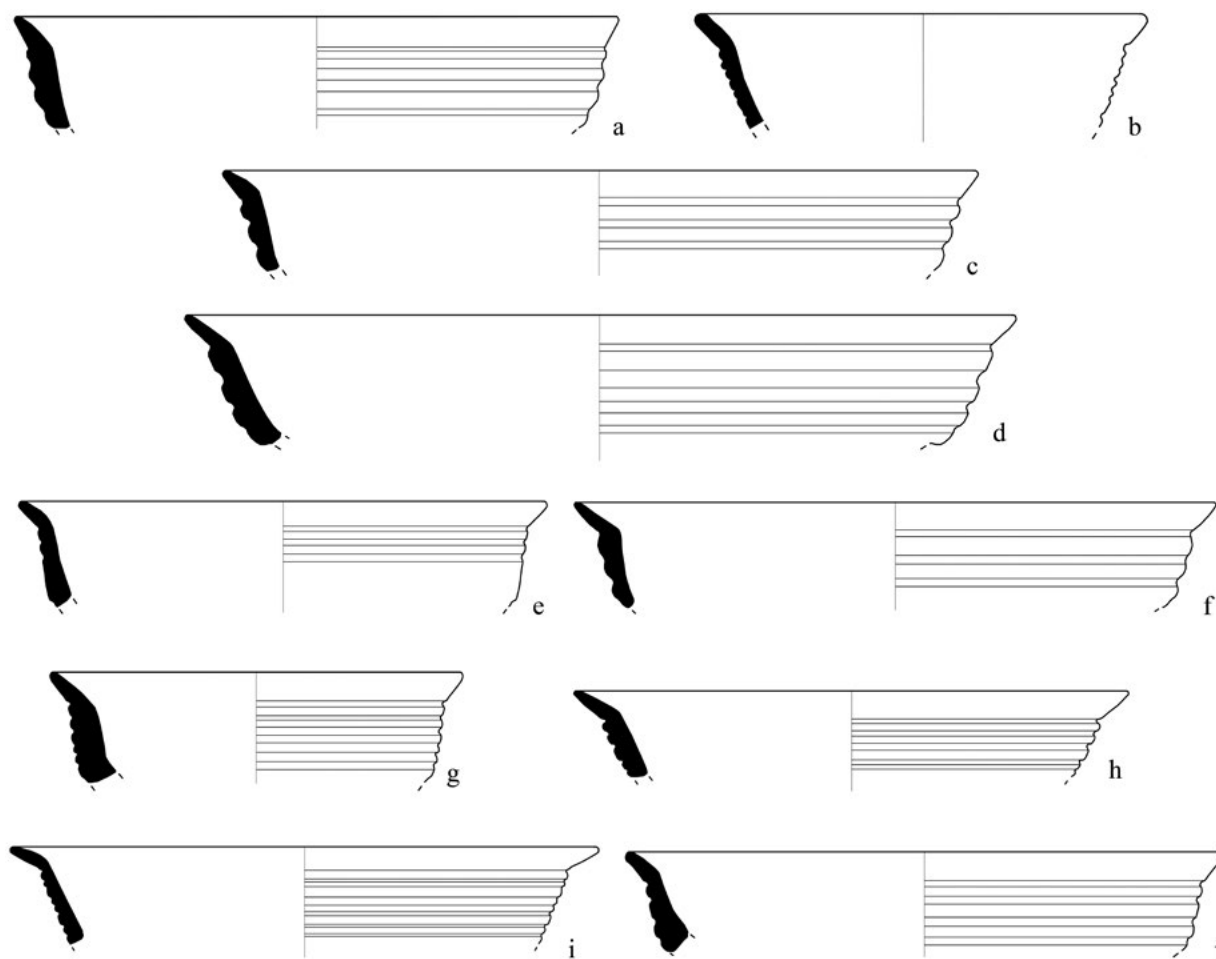


Figure 54. Dipper cups of Type IIC: a) 100032f, b) 100034l, c) 100032c, d) 100032h, e) 100033k, f) 100032b, g) 100033i, h) 100033j, i) 100033g, j) 100033n (drawing scale 1:2).

– **Type III** (Figure 55): very deep conical body, profile sharply curved inward, thickened square-sectioned rim, couple of vertical lug handles. It is represented just by example 2763.



Figure 55. Dipper cup of Type III 2763 (drawing scale 1:2).

– Strap handles

The distribution of dipper cups at Qlejgha tal-Bahrija is also documented by the large number of fragments of strap handles (Figures 56-59), which also represents the best example of the peculiar decorative repertoire of this pottery production, as it will be discussed below. Noteworthy is also a group of 34 body fragments unfortunately too small for being considered diagnostic (100092).

– Bowls

The discriminating criterion used to distinguish bowls from cups is the depth of the body equal to or lower than 5 cm and a mouth diameter equal to or higher than 15 cm. Such a shape represents a novelty with respect to the previous Borġ in-Nadur repertoire and, although it is



Figure 56. Decorated strap handles of dipper cups: a) 2744, b) 2704, c) 2718, d) 2660, e) 2738, f) 2671, g) 2705, h) 2732.



Figure 57. Decorated strap handles of dipper cups 100028a-j.

Figure 58. Decorated strap handles of dipper cups: a) 2735, b) 2703, c) 2736a, d) 2736b.



Figure 59. Decorated strap handles of dipper cups: a) 2656, b) 2717, c) 2707, d) 2706.

Figure 60. Bowls: a) 100068, b) 2702, c) B/P50, d) 2723 (drawing scale 1:2).

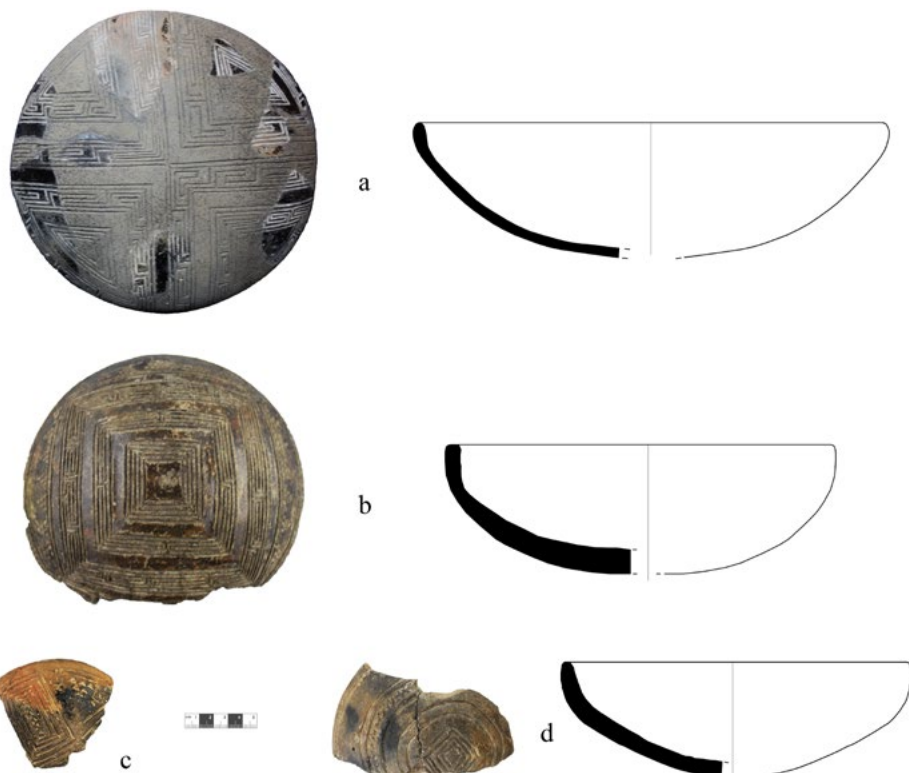


Figure 61. Bowls: a) 100067, b) 2755, c) 2761.

attested in limited number of examples, it is one of the most representative ones for the Bahrija pottery production, especially with respect to the decoration.

All the bowls basically share the same typology, with hemispherical shallow body, square-sectioned straight rim and flat or lightly rounded base (Figures 60-62).



Figure 62. Bowls: a) B/P64, b) 100086, c) s.n. (from showcase of the museum).

Example 100086 could possibly be a separate variety of bowl with surmounting horizontal loop handles above the rim (Figure 62).

– Trays

This category includes a significant group of materials which, in a certain way, represents a novelty. The decision to use the term ‘tray’ to define them depends on the fact that such artefacts are actually the latest typological development of the trays of Borġ in-Nadur tradition (Tanasi 2015, pp. 60-63). However, such Bahrija examples drastically differ from those prototypes in terms of their technology, decoration, and in part, for their typology. Usually the term ‘tray’ refers to coarse wares, whereas the rectangular trays of Bahrija are definitely not; therefore, the term used here for this class could definitely be subject to changes in the future. Fifteen fragments of shapes have been found (Figures 63-64) and they all show a

very complex decoration with cut-out and impressed elements. Actually, together with the bowls and the dipper cups, trays are the shapes better representing the Bahrija decorative repertoire. Although the fragmentary condition of these pieces leaves several questions unanswered, it is possible to make some observations. Several examples clearly show straight angles (100064a, 100064b, 100064c, 100064d, 100064i, 100064l) suggesting a square or rectangular shape. The base should have been flat and undecorated as in 100064b, while all the outer walls were heavily decorated. 100064f shows a thickened rim and a slightly inwardly curved profile and a through-hole which goes through the top of the rim and the inner side of the wall, suggesting that it could have been used to secure a lid of some sort through a small knotted cord. 100064l also has a through-hole, but it is unclear whether it was a simple repair or not. More puzzling is 100064o which may be part on an internal septum of such trays.



Figure 63. Fragments of trays 100064a-o.

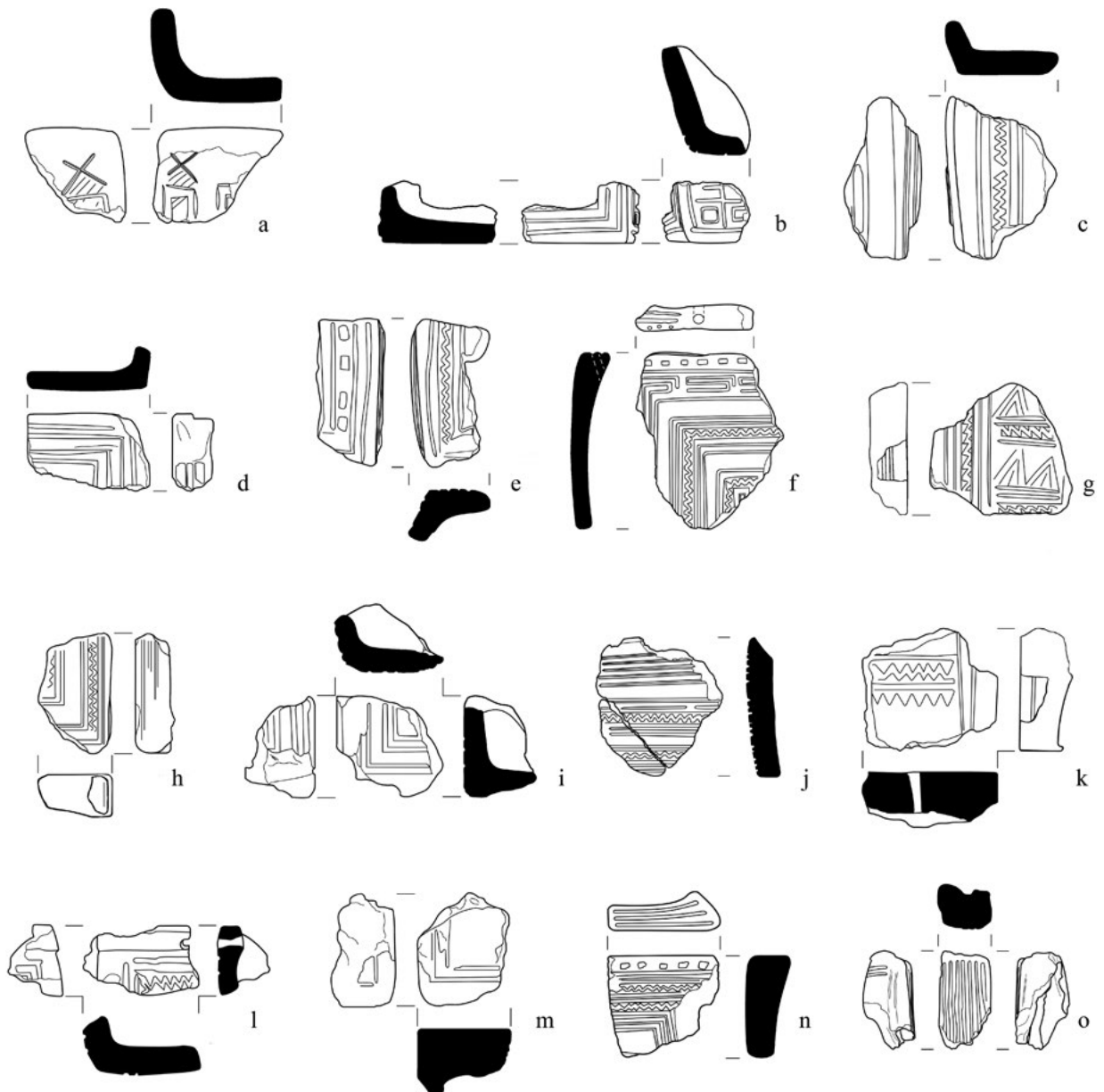


Figure 64. Fragments of trays 100064a-o.

– Cooking jars / jars

The classification of the jars results in being rather complicated, mostly due to the lack of truly characterizing features for this class. The examples identified are all undecorated with only a single one of them clearly showing traces of firing (100084a). Although typologically close to cooking jars, it would be safer to consider them as simple jars. It is possible to characterize all the examples into two main groups: Type I and Type II. Both are connected to the Borġ in-Nadur tradition but without striking comparisons with any jar known from Borġ in-Nadur contexts. Type II jars in particular, vaguely recall, especially with respect to the rim, examples from Borġ in-Nadur settlement (Tanasi 2015, pp. 51-55). 100039a, 100039b and 100112a-b

show the distinctive dark red slip with black blotches surface treatment, although such a feature without other typological reference cannot let us consider those pieces as Borġ in-Nadur.

Type I (Figure 65): This type could be subdivided into two main categories that cannot be formalized as a sub-type due to the limited number of examples. The first, 100058, has a cylindrical body with an indistinct straight rounded rim and a couple of large horizontal lug handles; the second, 100084a, presents a more globular body with a profile curbed inward and thinned indistinct rim and the same kind of handles.

Type II (Figure 66): The examples of Type II show the same typology of square-sectioned rim, thickened and

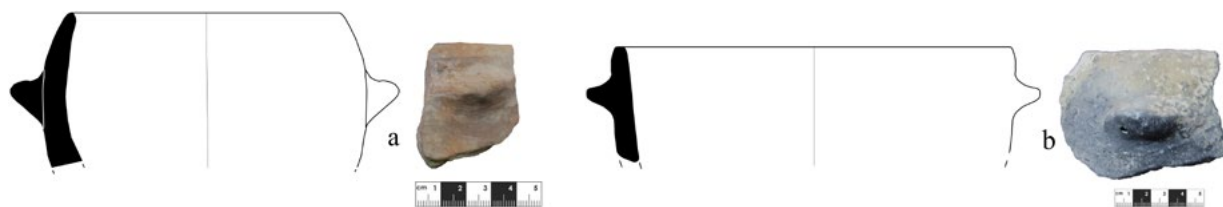


Figure 65. Jars of Type I: a) 100058, b) 100084a (drawing scale 1:3).

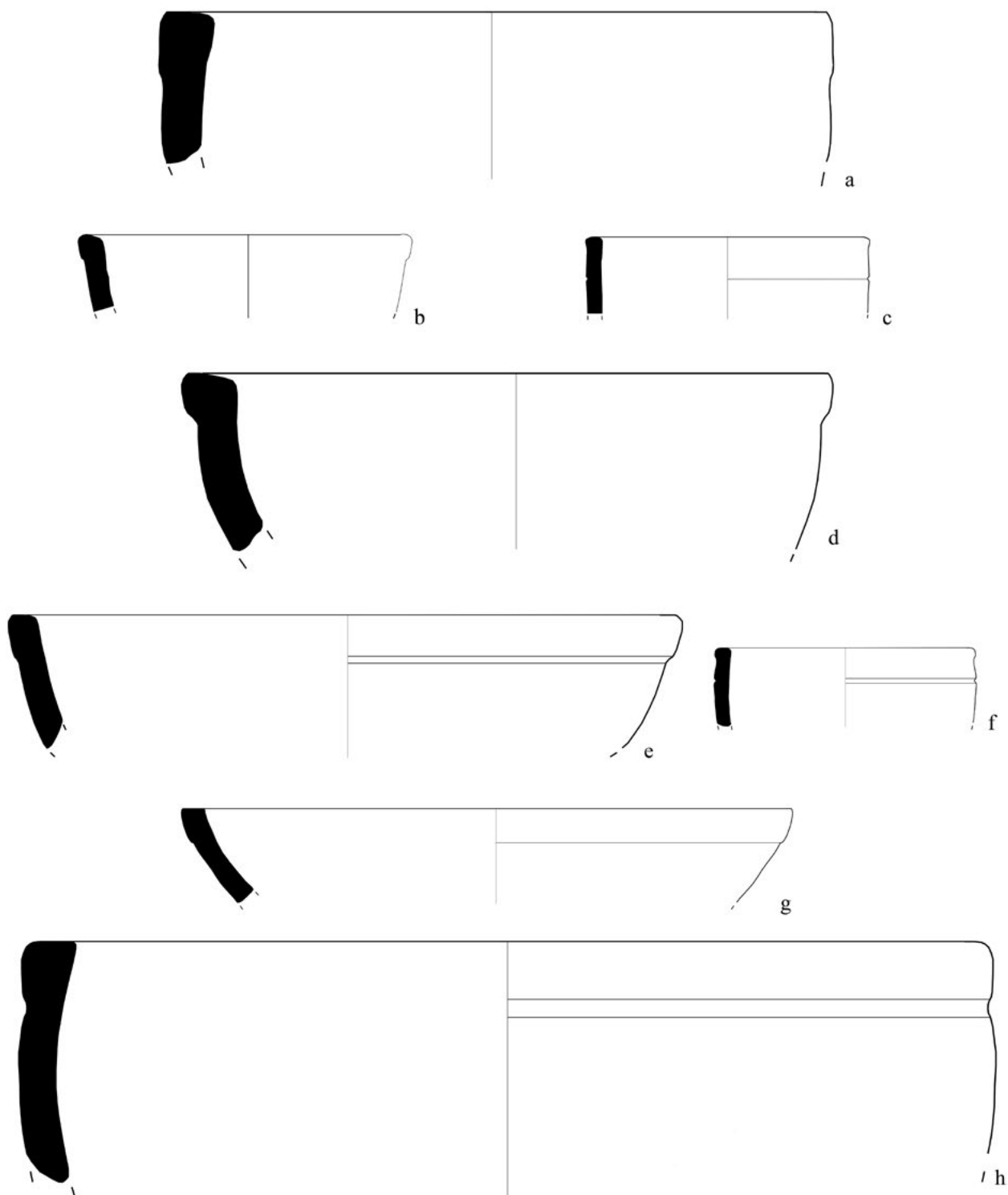


Figure 66. Jars of Type II: a) 100039a, b) 100039b, c) 100039c, d) 100039d, e) 100039e, f) 100039f, g) 100112a, h) 100112b (drawing scale 1:3).

slightly protruding outward. The profile of the vessel can be straight (as 100039c, 10039f) or curved outward (100112a, 100039b, 100039e) or inward (100039a, 100039d, 100112b), a feature that can infer sub-typological nuances.

CLOSED SHAPES

The percentage of closed vessels is remarkably lower with respect to open ones. Also, due to the difficulty to classify simple wall sherds, the only typological group that can be identified is represented by jugs.

– Jugs

Jugs are quite underrepresented in the assemblage. The two better preserved examples, 2649 and 2721 (Figure 67), show a novel typology of juglets with

carinated globular body, embossed or flat base, high neck and a very peculiar triangular section vertical strap handle that is clearly peculiar of the Bahrija repertoire. Another example of larger dimensions, 100052, possibly shows a different type of jug with an inwardly curved rim and thick vertical strap handle (Figure 68). The distribution of such a class is also documented by the several strap handles with the typical cut-out decoration with multiple triangles by the upper attachment, already typical of the Late Borg in-Nadur type and later popular also in the Bahrija repertoire (Figures 69-70). Example 100053 (Figure 71) would be instead interpreted as the mouth of a juglet which apparently was trefoil shaped, a very significant evidence which cannot be fully taken into account due to the poor conditions of the piece. Comparable with juglet 2649 is ultimately the carinated globular body with embossed base 100060a (Figure 72).



Figure 67. Jugs: a) 2649, b) 2721.



Figure 68. Jug fragment 100052.



Figure 69. Jug handles: a-c) 100085a-b-c, d) 100085f.

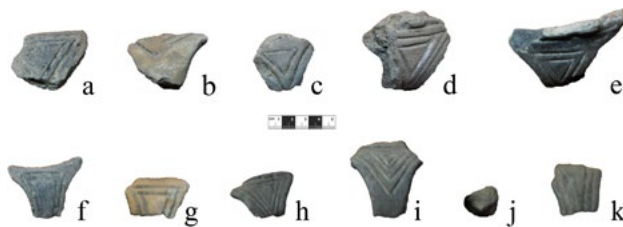


Figure 70. Jug handles 100093a-k.

Figure 71. Trefoil mouthed (?) jug fragment 100053.



Figure 72. Carinated globular body with embossed base 100060a.

SPECIAL SHAPES

– ‘Cheese-strainer’ vessels

The so-called cheese-strainer vessels (Evans 1971, p. 227) are definitely a novelty, consisting of three fragmentary examples that were found at Qlejgħa tal-Bahrija: 100051a, 100051b, 100051c (Figure 73). They

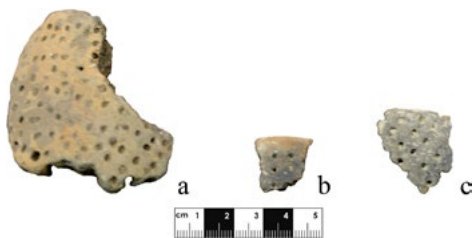


Figure 73. Cheese-strainer vessels 100051a-c.

have been interpreted as being related to Period IIC and compared with similar Sicilian vessels of the Ausonian II culture (Trump 1961, p. 261). However, their chronology is not fully clear. In fact, two examples of similar strainers were found at the Borġ in-Nadur temple in the Bronze Age context of Chapel B (Tanasi 2011, p. 84), and others from Tas-Silġ South (Sagona 2015a, p. 32) which, however, does not necessarily mean that they date to the Borġ in-Nadur period.

– Tokens

Definitely cut from typical Bahrija pottery are the four tokens 100095a, 100095b, 100095c and no. 15 (Figure 74), which is exhibited in showcase no. 4 at the National Museum of Archaeology. Although nothing can be said about their function, due to the lack of contextual information, it is noteworthy to highlight that such objects are not attested in the Borġ in-Nadur period.

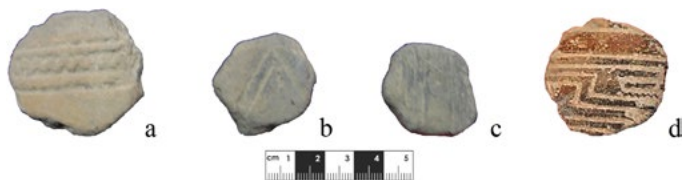


Figure 74. Tokens: a-c) 100095a-c d) no. 15, National Museum of Archaeology, showcase no. 3/15.

– Knobs

A puzzling class of materials is represented by knobs, intended as pommel-like plastic applications that are usually related with lids. Examples 1027a, 1027b



Figure 75. Knobs 1027a, 1027b, 100101 (B/P 184).

and 100100 (Figure 75), were elsewhere erroneously attributed to coming from the Borġ in-Nadur temple (Tanasi 2009) while their provenance is clearly Peet's excavations at Qlejġha tal-Bahrija, as the presence of 1027b in Peet's report testifies (Peet 1910, pl. XV, 7). In those publications (Tanasi 2009 and 2011, p. 146) example 100101 (B/P184) was also mislabelled as BN/P182: this clarification serves now as *errata corrige*. Their interpretation as finial knobs of Cretan type Protogeometric B and Early Geometric lids of urns still remains valid (Tanasi 2009; 2011). The absence of comparisons in the Borġ in-Nadur repertoire and the later chronology of the Cretan prototypes suggests that they could be peculiar to Bahrija production.

Provisionally listed as knobs are two rather puzzling objects, the function of which, and certainly also the precise chronology, is still unclear. 100051 is a sort of spool, with a flat base with the top part missing, while



Figure 76. Terracotta objects: a) 100054, b) 100028.

B/P182, also a kind of knob presented in Peet's report (Peet 1910, pl. XV, 71) recalls an identical piece from Late Borġ in-Nadur layers at the Borġ in-Nadur settlement (Tanasi 2015, pp. 66-67) (Figure 76).

– Theriomorphic spouts

Another novelty are the two examples of theriomorphic spouts, one published by Evans, B/P1001, (1971, p. 106) and a second represented by 100055 (Figure 77). They are basically cylindrical spouts shaped as animal heads with a canal passing through the neck and mouth. 100055 shows two circular incised eyes and, though fragmentary, likely portrayed a horned animal. B/P1001 seems to be shaped in a more accurate way, again with incised circular eyes, dashes to indicate the sides of the mouth and a series of additional dashes on the sides possibly indicating some body feature of the animal. Evans named such objects 'becco-ansa', interpreting them as a sort of handle-spout attached to a jug-like vessel that he traced back to the Italian mainland to the extent of using them as one of the example of Italian influence as responsible for the emergence of the Bahrija-type (Evans 1953, pp. 90-91).



Figure 77. Theriomorphic spouts: a) 100055, b) B/P1001 (Evans 1971).

However, closer comparisons for such objects can be drawn to the production of vessels with theriomorphic applications (among which are spouts) in Protogeometric and Geometric Crete, as for example at Vrokastro (Hayden 1991). Another link, on top of that of the finial knobs, with Crete that deserves to be discussed in depth.

4. Bronze and Iron Age materials from Trump's excavation (1959)

The reassessment of Trump's excavation at Qlejgħa tal-Bahrija through the critical analysis of his notebooks, publications and technical drawings (see chapter 1) has shed light on the complex stratigraphy he observed at the site. Unfortunately, of the significant quantity of ceramics recorded by Trump just a handful of pieces were clearly identified during the study carried out by the National Museum of Archaeology. Such pieces could be clearly attributed to the 1959 fieldwork because they were labelled with the name of the trench and the number of the layer, for example 'B.B3' would stand for Qlejgħa tal-Bahrija trench B layer 3. In other cases, some fragments illustrated in the report (Trump 1961) were found mixed with the materials from Peet's excavation, which were unlabelled, with the exception of a selection marked with the code 'B/P' (Bahrija/Pottery) plus a progressive number that was assigned later on by Evans. How and when the group of materials got mixed up is unclear, as it is the fate of the many missing ceramics described in Trump's report.

The paucity of materials becomes even more problematic due to the particular approach taken in the 1959 fieldwork. The critical analysis undertaken by Cardona (see chapter 1) has pointed out how Trump's main goal for the excavation at Qlejgħa tal-Bahrija was to focus more on the ceramic assemblage and its stylistic and typological evolution along the stratigraphic deposit rather than on the interpretation of the material evidence uncovered. To achieve that goal, Trump made some stretches and simplifications to offer a clearer picture than what the materials showed, leaving us little to work on to reconstruct *ex post* the various stages of the excavations. The two examples of section views and matrix, one based on the published report more representative of the ceramic sequence and the other from his notebook, which gives a true

representation of the sequence of activity on the site (see chapter 1) (Figures 78-79), represent the challenge

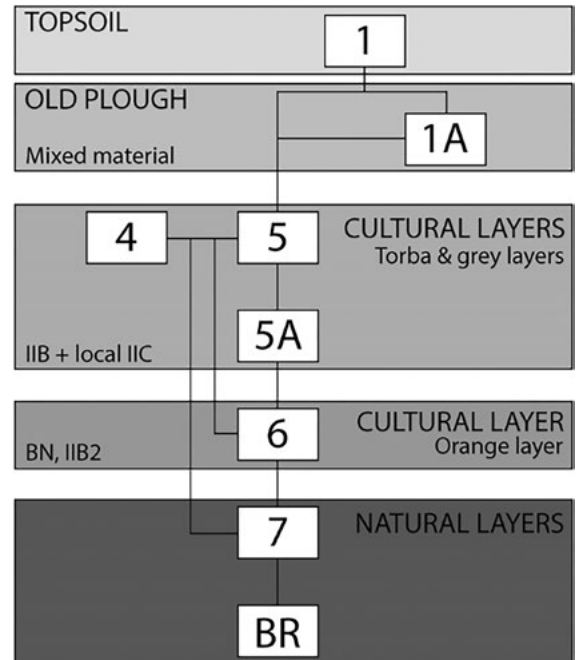


Figure 78. Bahrija, matrix based on Trump's published report (Cardona in this volume).

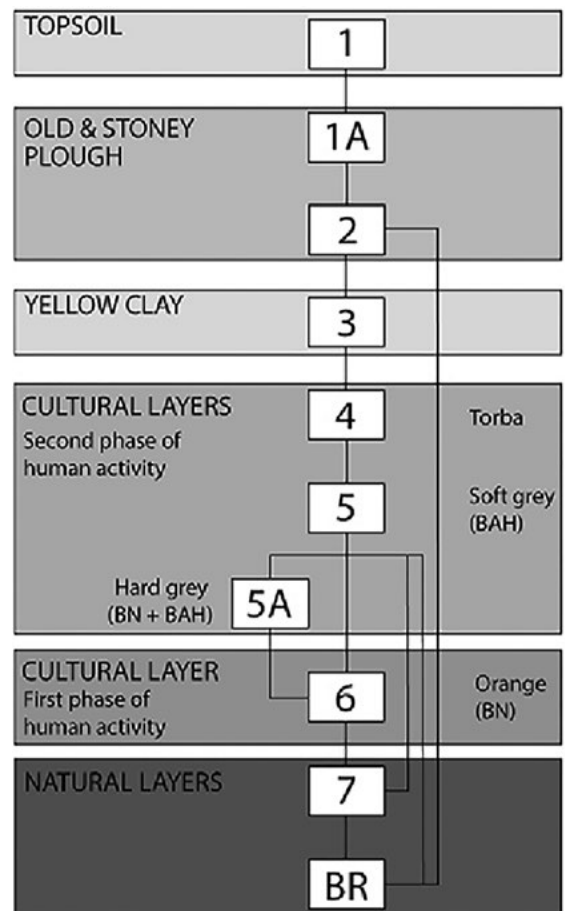


Figure 79. Qlejgħa tal-Bahrija, matrix based on Trump's notebook (see chapter 1).

well. Either way, it appears clear that the site underwent two main phases of human activity, the latest of which – characterized by a *torba* floor possibly related to a large hut – offered, according to Trump, a mixture of materials of Borġ in-Nadur and Baħrija-type. In order to navigate through Trump's report, his notebook, and the labels given to the materials, it will be helpful to refer to Cardona's Table 1 (see chapter 1).

The few ceramics located at the National Museum of Archaeology come from trenches B, C, D and E, plus a handful of others from an unknown context that are nevertheless presented in pl. XVI of Trump's published report (1961). Nothing from trench A was retrieved.

Trench B

In trench B, the *torba* floor initially numbered as layer 4, become layer 5 in the published report, therefore the materials discussed here from layers 3 and 5 have to be considered as related to the second phase of occupation. No traces were found of the large jar found *in situ* during the excavation (see chapter 1, Figure 8).

100120 – Layer B3 ('Yellow clayey') (Figure 80)

Grey Ware cup with hemispherical body, inwardly curved profile, rounded rim, and embossed base; grey burnished surface; decoration with plastic rope bands.

100047 – Layer B3 ('Yellow clayey') (Figure 81)

Token cut-out of a wall with dark brown burnished slip and excised and impressed decoration typical of Baħrija-type.

2652 – Layer B3 ('Yellow clayey') (Figure 82)

Miniature juglet with globular body, rounded rim curved outward, flat base surmounting loop handle;



Figure 80. Cup 100120.



Figure 81. Token 100047.



Figure 82. Miniature jug 2652.



Figure 83. Dipper cup 100034l.



Figure 84. Strainer vessel 1000051d.

decoration with series of globular pellets typical of the Late Borġ in-Nadur type.

100034l– Layer B5 ('Grey habitation, soft') (Figure 83)

Fragment of dipper cup with deep body, thinned rim curved inward; dark brown burnished slip; excised and impressed decoration typical of Baħrija-type.

Cup 100120 clearly belongs to the above-mentioned examples of Grey Ware and recalls closely the above mentioned piece 100061a. The token 100047, identical to the four examples discussed above (Figure 74) is clearly cut from a Baħrija-stile pottery fragment. The dipper cup fragment 100034l is a typical representation of the Baħrija-type, while the miniature jug 2652 (Trump 1961, pl. XVI, upper, second row at the center), which finds a striking comparison with examples from the settlement of Thapsos in Sicily (Tanasi in this volume), better reflects features of the Late Borġ in-Nadur production.

Trench C

The few pieces from this trench are marked as coming from layer 5 and 6, which were renumbered by Trump as 6 and 7 and therefore both precede the first occupation phase.

100051d – Layer C5 ('Grey habitation, soft') (Figure 84)

Wall fragment of a strainer spouted jug; red-slipped surface.

100056 – Layer C6 ('Orange') (Figure 85)

Undecorated wall fragment with a metal shard stuck in it before firing.



Figure 85. Wall fragment 100056.

100038a – Layer C5 ('Grey habitation, soft') (Figure 86) Portion of basin with profile curved inward and rounded rim; dark brown-grayish surfaces; excised decoration with linear geometric motifs typical of Late Borg in-Nadur type.

The fragment of strainer vessel 100051d (Trump 1961, pl. XVI, lower right, third row, first on the right) belongs to the class of strainer spouted jugs and recalls the Borg in-Nadur examples discussed above from Peet's excavations. Basin 100038a (Trump 1961, pl. XVI, upper, third row, first on the right) shows the typical motif of the multiple triangle in horizontal series (Tanasi 2011, p. 95 motif O) associated with the Late Borg in-Nadur type (Tanasi 2015, pp. 69-70). The wall fragment 100056 is rather puzzling as it is unclear if the presence of the metal shard was intentional or accidental.

Trench D

From trench D, layer 5 comes just dipper cup 100031g. The same provenance has some bone specimens, 100065a-c, (Figure 87), among which are a horn of *Ovis vel Capra*, which was submitted for radiocarbon dating (see chapter 9).

100031g – Layer 5 ('Grey habitation, soft') (Figure 88) Dipper cup with deep conical body, rim curved outward, surmounting strap handle, red-slipped surface with black blotches. Late Borg in-Nadur type.

The dipper cup 100031g (Trump 1961, pl. XVI, lower left, third row, center) recalls the Type 3 (Tanasi 2011;



Figure 87. Bone specimens 100065a-c.



Figure 86. Basin 100038a.



Figure 88. Dipper cup 100031g.

2015) attested in a context dated to Late Borg in-Nadur period at the settlement of Borg in-Nadur.

Trench E

As for the case of trench D, only one piece associated with layer 5 was located from such context.

100109 – Layer 5 ('Grey habitation, soft') (Figure 89) Wall fragment of a large open vessel; decorated with thick red paint directly applied on the body. Late Borg in-Nadur Painted Ware.

This wall fragment shows the typical decoration of the Painted Ware associated with the production of the Late Borg in-Nadur period (Tanasi 2015, pp. 73-79). It seems to belong to the same group of fragments presented by Trump (1961, pl. XVI, lower left, first and second row, third row, second on the left) which was not possible to locate there were possibly more fragments of the same type as some further examples published by Evans seems to testify (Evans 1971).

Another important finding documented in this trench is the large platter found in situ, in layer 5A of the northern extent of trench E (see chapter 1, Figure 9), which was firmly set in the ground through the use of packs of clay (Figure 90). During the review of the materials from the settlement at Borg in-Nadur several examples of 'trays' with very rough outer walls and bases were identified and interpreted as possibly inserted in the floor level (Figure 91) (Tanasi 2015,



Figure 89. Painted Ware wall fragment 100109b.

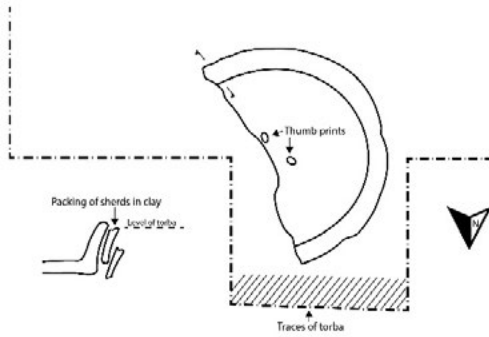


Figure 90. Platter from layer 5A of the northern extent of trench E (see chapter 1).



Figure 91. Examples of 'trays' from settlement at Borg in-Nadur, very likely to be considered floor platters.

pp. 60-63). We now have a precise comparison with this platter from trench E. Possibly a second similar platter was also found in a not clearly identifiable part of the same trench (see chapter 1, Figure 9, top).

Unknown context

The last group of materials, presented in Trump 1961 without any indication of provenance, does not offer any clue to link it with a trench or layer, suggesting that it was possibly recovered from the topsoil. The group includes six dipper cups (100031c, 100032d, 100032e, 100033k, 100033g, 100034h) and one miniature cup (100042a) mostly of types already commented on above with respect to the Bahrija pottery from Peet's excavations (Figures 92-93).

Dipper cup 100031c represents an original variety of Type IB, 100032d, 100033l and 100032e are comparable to Type IIA, while 100033g and 100034h recall closely Type IIC. Miniature cup 100042a find parallels with the above discussed examples 4908 and 100042b.



Figure 93. Dipper cup 100034h.

5. Bahrija pottery: decoration and technology

5.1 Decoration

The incised, cut-out and impressed (or at times rouletted) decoration with its great variety of single motifs and complex patterns is definitely the most characterizing feature of the Bahrija pottery, especially of the developed style. At the same time though, it is the most difficult aspect of this production to be studied due to the fragmentary conditions of the materials. While the current typological study was ongoing, Carlo Veca was conducting a parallel comprehensive analysis of the Bahrija ceramic decoration scheduled to become a separate publication, a preview of which, courtesy of the author, is presented here (Figure 94).

The most common decorative techniques are cut-out, incised and incised/impressed/rouletted. It is remarkable the total absence of plastic application, which was one of the indicators of the Late Borg in-Nadur pottery. In some examples from Tas-Silg North (see chapter 11) is recorded a black band, slipped or painted, on rims of undecorated burnished bodies, which could be, in our opinion, the last representation of the Late Borg in-Nadur Painted Ware. The decoration

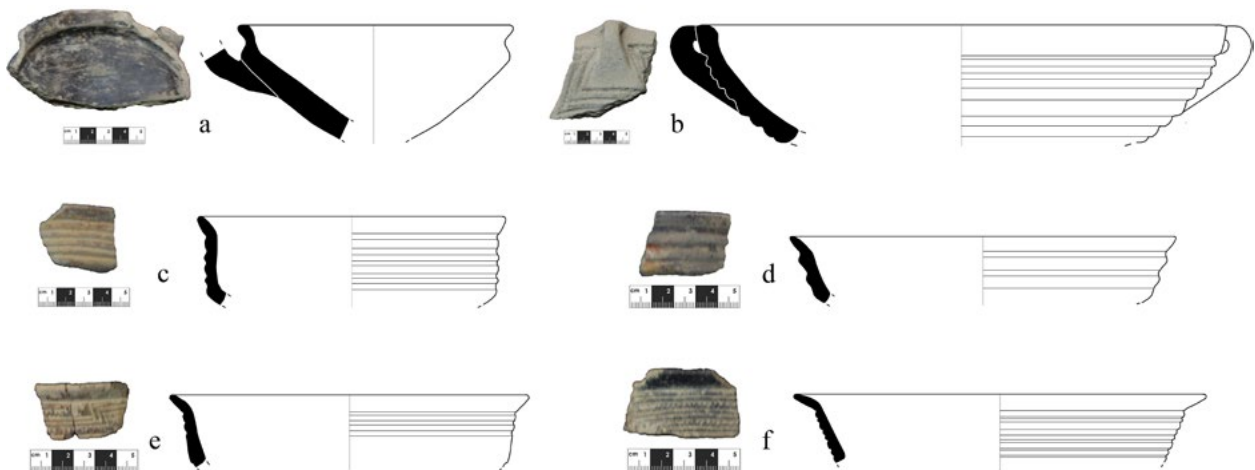


Figure 92. Materials from unknown context of Trump's excavation: a) 100031c, b) 100032d, c) 100032e, d) 100033k, e) 100033g, f) 100042a.

Table 1. Main type of decorative motifs and decorative techniques

Motifs	Decorative techniques			
	<i>Incised</i>	<i>Incised/Impressed</i>	<i>Impressed</i>	<i>Cut-out</i>
Dot				
Circlet				
Line				
Horse shoe				
Chevron				
Bumped line				
Braid				
Triangle				
Hatched triangle				
Single meander				
Single-angled meander				
Hourglass				
Lozenge				
Multiple angle				
Multiple rectangle				
Multiple square				
Meander				

is essentially represented by the occurrence of single main motifs (Table 1) which are also combined to create more complex patterns. The combined use of the three techniques result in the distinctive labyrinthine Bahrija decoration which often covers the entirety of the vessels' bodies. Table 1 aims at offering just a preliminary overview of the motifs and should not be considered as an exhaustive summary of all the occurring decorative features that, as mentioned below, are still under study.

– Cut-out motifs

Horizontal lines (Figure 94.3-4): cut-out with a pointed or comb-like tool by the rim, on the shoulder or the maximum expansions of the body, as a single motif or in combination with other motifs, more often with the chevron. Examples: 100032b-e, n, o.

Chevron (Figure 94.7): cut-out in horizontal series, often in combination with other motifs as horizontal parallel lines and meanders, at times occurring in vertical series in alternation with parallel horizontal lines cut-out with a comb-like tool. Rather common on dipper cups. Examples: 100033a-c, 100091.

Bumped line (Figure 94-11): cut-out in horizontal series, composed by a series of equal arcs, often in combination with other motifs as horizontal parallel lines; it represented a development of the chevron as appears on the fragment 100034f. Rather common on dipper cups. Examples: 100034c.

Braid (Figure 94.13): internal motif cut-out comprised between a couple of parallel cut-out lines, often in a horizontal series and combined with other motifs as horizontal parallel lines. Example: 100033m.

– Incised motifs

Horizontal lines: incised with a pointed (Figure 94.3) or comb-like tool (Figure 94.4) by the rim, on the shoulder or the maximum expansions of the body, as a single motif or in combination with other motifs, more often with the chevron. Rather common on dipper cups. Examples: 100032; 100034l; 100036d.

Horse shoe (Figure 94.5): composed by a series of dashes and often combine with horizontal lines. Rather common on dipper cups. Examples: 100034d.

Multiple triangle (Figure 94.16): either with point upward or downward, it is composed by a group of four or more isosceles triangles with equal base, often combined with horizontal lines; it occurs on the shoulder or carination of hemispheric cups (100036e-f).

Hatched triangle (Figure 94.17): incised with a pointed tool and set with point downward, it is hatched with oblique dashes and occurs in horizontal series. Example: 2659.

Single Meander (Figure 94.8): incised with a pointed or comb-like tool with three parallel lines, often combined with chevrons (100033k, 100034b, 100034j)

and occurring on cups (100037a) and bowls (100067) (Figure 94.9).

Angled Meander (Figure 94.6): incised with a pointed tool with two parallel lines, often in combination with horizontal lines (B/P38, 100033d, 100033d h, 100033d o); it occurs on cups (100038e, 100038i, 100042a, 100042c).

Meander (Figure 94.31): a simpler version is made with a pointed tool and arranged horizontally (100094); mostly commonly it is incised with a comb-like tool with two or three parallel lines forming straight angles (100033l, 100034a, 100034e) (Figure 94.28); it is often combined with chevrons in order to create complex patterns on the shoulders of juglets (2649), the bases of bowls (2702), and dipper cups (2702) (Figure 94.33).

Hourglass: incised with a pointed tool, it occurs with different dimensions; it is hatched either with another triangle, mostly on handles (100093) (Figure 94.22), or with a series of multiple isosceles triangles (up to four) or with a simple incised triangle (100119c) (Figure 94.23).

Lozenge: incised with a pointed tool (Figure 94.10) it occurs in series (100094); it can also be a single motif with a smaller lozenge inside especially on handles (100093) (Figure 94.14); it is often arranged in series with lozenges hatched with horizontal dashes (Figure 94.20), even in handles (2707).

Multiple angle (Figure 94.19): incised with a pointed tool, occurring on handles and body parts, arranged in multiple vertical series (100094).

Multiple rectangle: incised with a pointed tool with three or four multiple rectangles of smaller size (Figure 94.29), often occurring on shoulders, carination lines, and the upper handle attachments of dipper cups (100035a, 100035b, 100035d, 100035f).

Multiple square (Figure 94.30): incised with a pointed tool with four multiple squares of smaller size, occurring on shoulders and carination line of cups (100036b).

– Incised/Impressed/Rouletted motifs

Hourglass: incised with pointed tools, it occurs with different dimensions; it is hatched either with impressed oblique dashes intercepted by incised horizontal lines in both the two triangles (Figure 94.24), more often on handles (2705), or with multiple oblique rouletted chevron lines in the lower triangle and impressed dots in the upper one (100091) (Figure 94.25), or with row of oblique incised lines alternated with series of tiny impressed triangles made with a tool with a triangular point in the lower triangle and deep socket-like triangular impression in the upper

one (100091) (Figure 94.26), or series of tiny stamped triangles made with a tool with a triangular point and filled with white gypsum paste in both triangles (2656) (Figure 94.27).

Hatched triangle (Figure 94.15, 94.18): contour line incised with pointed tool, it is hatched with impressed vertical dashes or series of tiny triangles (100045); it occurs as a single motif on the upper handle attachment of dipper cups (100035c).

Multiple hatched rectangle: variation of the incised multiple triangles framing at the center a rouletted horizontal chevron line (Figure 94.32), the most common motif on the carination line of dipper cups (100091; B/P50).

– Impressed/Rouletted motifs

Single motifs are impressed via tools with points with circular, triangular or rectangular section, more complex variants, as the multiple circlet and the chevron, are instead produced with a rouletted tool.

Dot (Figure 94.1): impressed with a pointed tool, often used as complementary motif for the hourglass (100091).

Rectangle (see Figure 64 above): rather rare and occurring only on trays, arranged in series.

Triangle (Figure 94.21): impressed with a pointed tool, it occurs as a single motif or in a series hatching incised triangles and hourglasses (100091, B/P50, 2656), often filled with white gypsum paste.

Chevron (Figure 94.12): rouletted, in horizontal series (100036c), often in combination with horizontal lines and meanders; it can occur in superimposed vertical series in alternation with chevrons and rows of parallel lines incised with a comb-like tool: common on dipper cups (100033e,f, 100034j-k).

While this initial survey does not aim to be conclusive, but just a quick overview of the most popular motifs, it has highlighted the decorative features peculiar to the typical Baħrija style pottery. In fact, the emergence of the rouletted decoration and in particular of the rouletted chevron, and of the incised and meander combined with it in complex patterns is definitely the main indicator of this specific production.

5.2 Technology

The first argument to address with respect to the pottery found at Qlejgha tal-Baħrija is that of the clay modelling, as the issue of hand making versus wheel throwing remains open. During the study of the Borġ in-Nadur pottery from the Borġ in-Nadur temple and

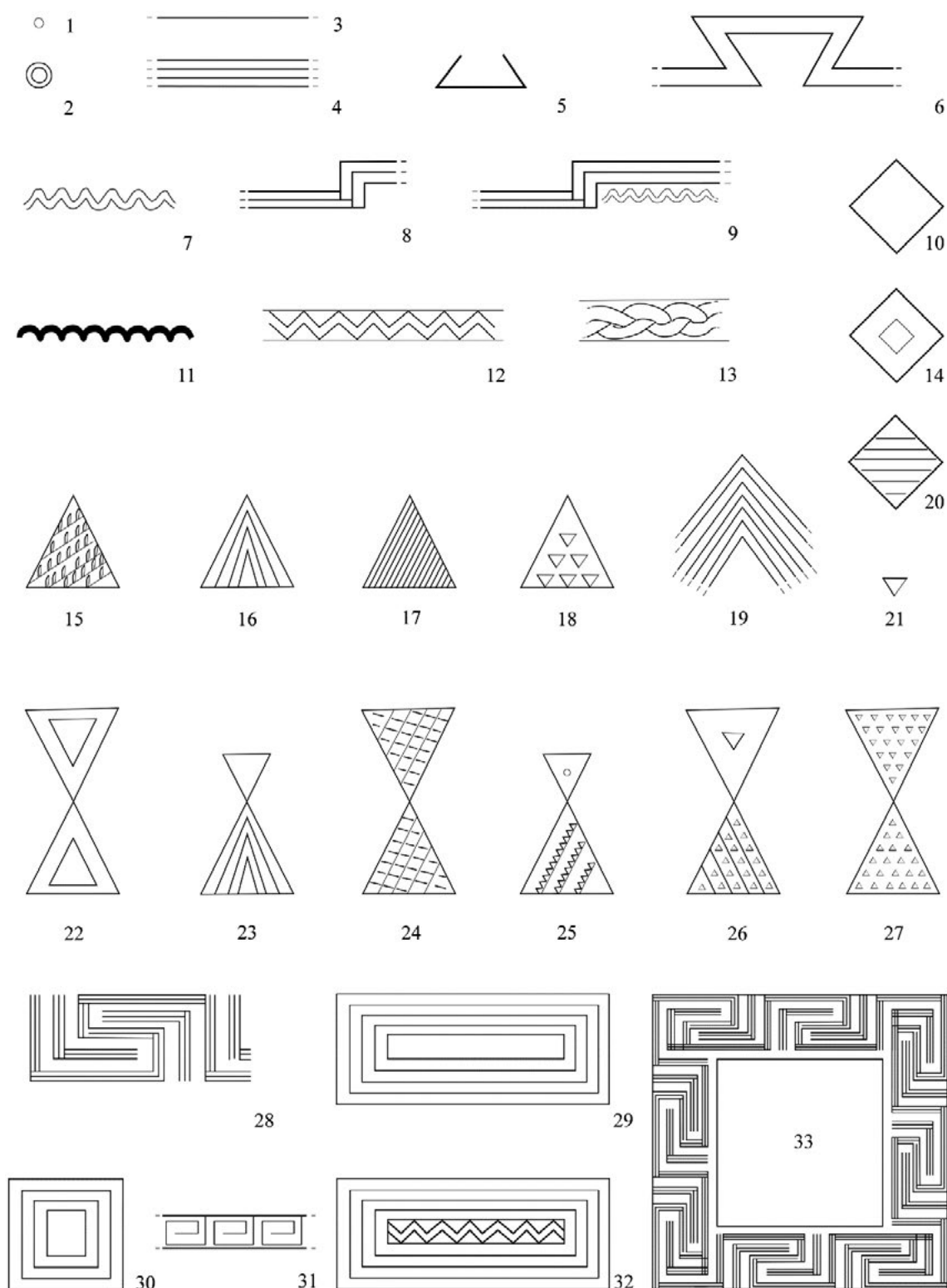


Figure 94. Main decorative motifs in the fully developed Bahrija pottery repertoire (courtesy of C. Veca).

the settlement (Tanasi 2011; 2015), the vast majority of the pieces analysed, even those of Late Borġ in-Nadur type, appeared to be hand-made. However, in certain cases clear traces of the use of a slow wheel were identified (Tanasi 2011, p. 92) of different opinion was Margaret Murray, who instead recognized many

examples thrown with the potter's wheel among the materials from Borġ in-Nadur temple (Murray 1923, pp. 35, 38, no. 179).

The materials from Qleġġa tal-Bahrija, both those of Late Borġ in-Nadur type and those of Bahrija-type,

again do not clearly show the use of the potter's wheel technology, although it is very likely that it was largely adopted on the basis of a series of assumptions. First the pottery of the fully blossomed Bahrija style shows some carinated shapes which are impeccable in their shaping and almost perfectly symmetrical, which would be quite challenging to accomplish without the wheel. Second, the circulation of local imitations of Mycenaean pottery (Pirone and Tykot 2017; see chapter 7) indicate that some Maltese artisans were able to use it for this specific task. The same argument applies for the presence of Sicilian strainer spouted jugs, possibly imitated from wheel made prototypes of the Sicilian Late/Final Bronze Age. Lastly, the circulation of Proto-Geometric and Geometric examples (Tanasi 2011, pp. 142-146), also wheel thrown, would further indicate a certain knowledge of this more innovative pottery shaping technology. Therefore, our opinion is to take for granted that the potter's wheel was known and adopted by the potters who produced the Bahrija pottery rejecting with Vella *et al.* (2011, p. 268) the hypothesis that it would have been introduced in Malta only with the arrival of the first Phoenician settlers.

The second argument is about the composition of the ceramic fabric and ware types. An initial attempt to identify main fabrics was attempted by Zammit, who distinguished through direct examination six different ones, to which she correlated a few typical shapes (see chapter 2). This work, which resulted from research carried out in 2002-2005, unfortunately could not take

into consideration the advances in our understanding of Borġ in-Nadur pottery technology brought along by the reappraisal of the evidence of Borġ in-Nadur temple and settlement (Tanasi and Vella 2011; Tanasi and Vella 2015). Therefore, although her work has some merit, when the current study was carried out in the summer of 2017, it was already outdated, so it was decided to not be influence by it and to start the analysis afresh. During my direct exam of the materials, it was possible to distinguish three categories of fine table ware (Orange Ware, Grey Ware, and Bahrija Ware) and three of semi fine/coarse ware (Orange-grey unslipped ware, Dark yellow coarse ware, Red-slipped coarse ware), the latter ones to be considered more typical of the materials of Late Borġ in-Nadur type (Table 2). More precisely the Orange-grey unslipped ware corresponded to Fabric 3 identified at the Borġ in-Nadur settlement (Tanasi 2015, tab. 3, p. 39; Barone *et al.* 2015, p. 101, tab. 2).

The petrographic analysis conducted on pottery samples representing all those wares demonstrated that they can all be narrowed down to two main fabrics: S1 Fossiliferous optically inactive groundmass, S2a-b Grog homogenous and inhomogeneous fossiliferous groundmass (see chapter 8). In particular, the finer Fabric S1 appears to be used only for cups whilst the grog Fabric S2 was used for all the shapes with a prevalence of the inhomogeneous S2b for the larger, and possibly coarser, pithoi. While Fabric S2 turned out to be coherent with Fabric A (coarse grog and fine quartz inclusions, groundmass with abundant fossil,

Ware type	Fabric description	Period
Fine table ware		
Orange ware	Medium/hard fabric, with lithic inclusions (very fine 10%) and voids (very fine-fine 2%), dark orange/light brown surfaces (from 7.5YR 6/6 to 10YR 6/8), and a blackish core; sometimes it has a red slip or in its absence surfaces are always burnished.	Transition Late Borġ in-Nadur / Bahrija
Grey ware	Hard fabric, with very tiny dark grits (very fine-fine 2%), grey surfaces with blackish core; it is unslipped, but surfaces are always burnished. A class of cups belonging to this category have plastic decoration or a dark red burnished slip.	Transition Late Borġ in-Nadur / Bahrija
Bahrija ware	Very fine hard fabric with very few voids and inclusions (15%); surfaces are slipped in very dark brown (10YR 3/2) or black colour.	Bahrija-type
Semi-fine/coarse ware		
Orange-grey unslipped ware	Very hard fabric, with lithic inclusions (very fine 10%) and voids (very fine-fine 2%) with orange-grey surface (from 5 YR 7/6 reddish yellow to 7.5 YR 7/3 pink), and a dark grey core (5 Y 4/1 dark grey); it is unslipped and generally undecorated.	Late Borġ in-Nadur
Dark yellow coarse ware	Medium fabric, with lithic inclusions and grog (fine 15%) and voids (fine 15%), dark orange surfaces (7.5YR 6/6), and a dark grey core; it is always unslipped and sometimes it has plastic linear decoration.	Late Borġ in-Nadur
Red-slipped coarse ware	Very hard fabric with lithic and dark inclusions (very fine-fine 2%), darker core, very sandy surfaces, and very thin red slip.	Late Borġ in-Nadur

Table 2. Main ware types and fabrics identified through direct exam among the materials from Peet's and Trump's excavations at Qlejgha tal-Bahrija.

high-medium birefringence) observed at the Borġ in-Nadur settlement, Baħrija Fabric 1 appears to be a novelty. Moreover, the absence at Qlejġħa tal-Baħrija of fabric B found among the materials observed at Borġ in-Nadur settlement and the results of the chemical analyses conducted alongside the petrographic exam clearly show that the communities of the two sites used different raw materials (Barone *et al.* 2015; Tanasi *et al.* in this volume). Finally, the archaeometric study also demonstrated the local production of Grey Ware, suspected of being of Sicilian origin due to the presence of the dark grits, initially considered of volcanic origin, and the of the examples of strainer spouted jugs, now to be considered local imitations of Sicilian prototypes (see chapter 8). A larger non-destructive campaign of chemical analysis on Baħrija pottery also validate the hypothesis of an overall local production (see chapter 7).

6. Baħrija pottery: distribution, chronology, repertoire

6.1 Baħrija pottery outside of Qlejġħa tal-Baħrija

The distribution of the Baħrija-type pottery outside of the site of Qlejġħa tal-Baħrija is rather limited and does not really help in narrowing down the extent of such an artistic phenomenon (Bonanno 2017). Few examples were announced by Evans at Għar Dalam, Ta' Ħaġrat and Tal-Qadi (Evans 1971, p. 227), one fragment of black-slipped carinated cup (37506) was identified from the 'rubbish heap' at Borġ in-Nadur settlement (Tanasi 2015, pp. 82-83, Figure 155) (Figure 95). Contentious is then a fragmentary object decorated with cut-out linear patterns from the Borġ in-Nadur temple, initially suspected of belonging to the Tarxien Cemetery phase and which could instead be interpreted as belonging to the Baħrija-type due to its fabric and decoration (Tanasi 2011, p. 88) (Figure 96). At Tas-Silġ, typical Baħrija shards from the Italian mission's excavations 1963-1970 amount to less than 50 fragments (Cazzella and Recchia

2011; see chapter 11). At Tas-Silġ South, three examples were identified as being Baħrija pottery (Sagona 2015a, pp. 32-33) (Figure 97), to which at least three more have to be added after careful reconsideration (see chapter 11) (Figure 98). At Tas-Silġ North, about 100 fragments were found during the 2003-2011 excavations (see chapter 11).

A different example of 'distribution' is represented by a small group of Baħrija pottery kept in the stores of the British Museum in London as a result of donations that took place overtime. Seven examples from the site of Qlejġħa tal-Baħrija belongs to the Charles Trenchmann Collection (nos. 473, 474, 476-480: Briffa and Sagona 2017, p. 91, figs 49, 120) (Figure 99) and five more from the same site are labelled as from unknown donors (nos. 880, 883-886: Briffa and Sagona 2017, pp. 125-126, figs 52, 53, 172, 173) (Figure 100). Although no. 476 is identified as 'Baħrija Ware' but is instead Late Borġ in-Nadur type.

Outside of the Maltese archipelago, Baħrija pottery was traditionally known to have been found in the settlement of Thapsos in Sicily. However, a recent reappraisal of that contentious evidence has proved how materials in question have to be interpreted as Late Borġ in-Nadur type rather than Baħrija (see chapters 10 and 11). Finally, strong analogies between the Baħrija pottery and the so-called Proto-Elymian production of Western Sicily, dated between the 9th and 8th centuries BC, have been recognized (Tusa 1992; Vella *et al.* 2011; see chapter 11) suggesting that a possible external influx on the Maltese local culture originated in that geographic area; an exciting hypothesis which, however, remains circumstantial.

6.2 Chronological issues

The revision of the materials from Trump's excavation has basically confirmed the presence of a second phase of occupation characterized by a mixture of Late Borġ



Figure 95. Terracotta model 4916 (BN/74) from Borġ in-Nadur temple (Tanasi 2011).

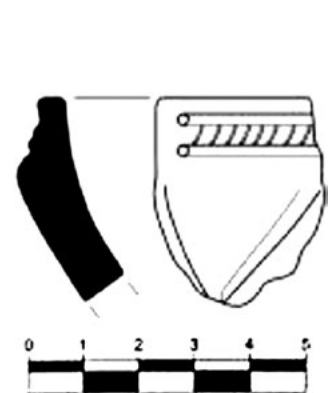


Figure 96. Baħrija pottery from Borġ in-Nadur settlement (Tanasi 2015).

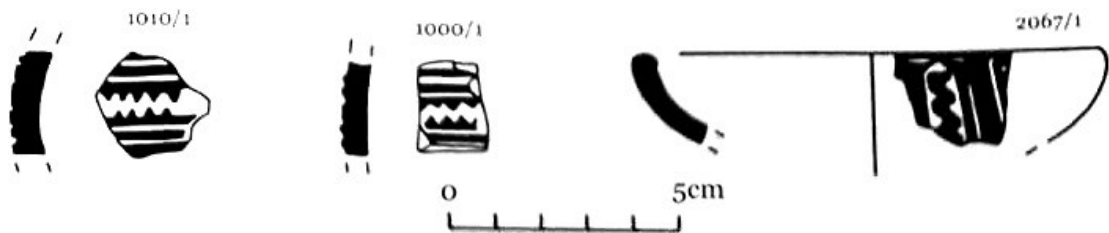


Figure 97. Bahrija pottery from Tas-Silġ South (Sagona 2015a).

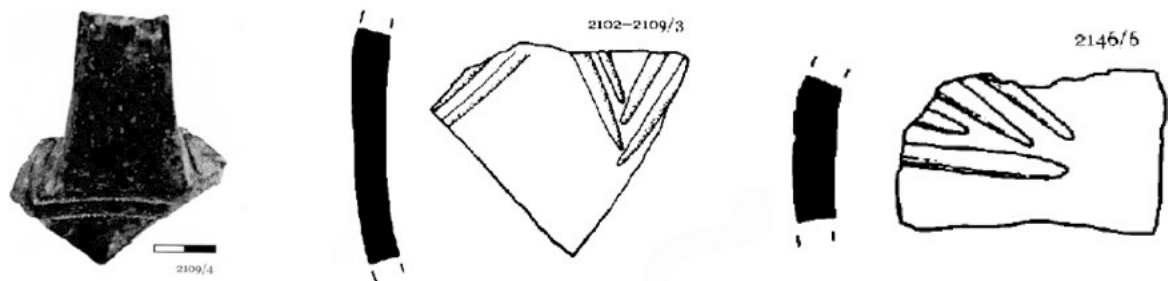


Figure 98. Pottery from Tas-Silġ initially interpreted as Tarxien Cemetery, reconsidered as Bahrija-type (Sagona 2015a, fig. 1:11:4, 8; 1:151:5).



Figure 99. Bahrija pottery from the Charles Trenchmann Collection at the British Museum, nos. 437-474, 476, 477-480 (after Briffa and Sagona 2017).

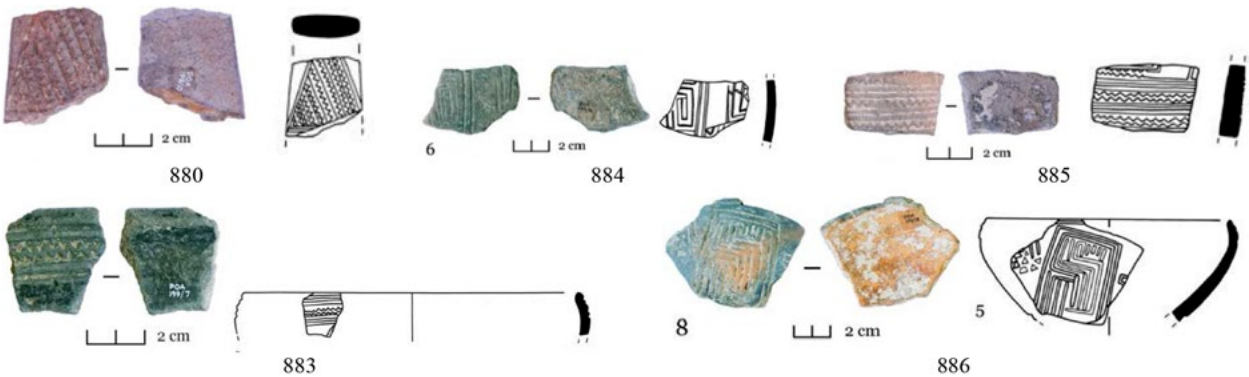


Figure 100. Bahrija pottery from 'Unknown Donors' at the British Museum, nos. 880, 883-886 (after Briffa and Sagona 2017).

in-Nadur and Bahrija pottery types. While there is no evidence to prove the presence of a previous level of occupation, underneath the *torba* floor level, which could have borne just Borġ in-Nadur type materials.

Such evidence does not really support Trump's claim that Bahrija ceramics run in parallel with the final stage of the Borġ in-Nadur production, instead of being a separate and subsequent phenomenon (Trump 1961, p.

258). Although, it is very likely that the fully blossomed Baħrija-type (henceforth Mature Baħrija) emerged after a period of an initial production developed in parallel with Late Borġ in-Nadur type (Tanasi 2015, pp. 87-89).

A recent attempt to reassess the final sequence of Maltese prehistory (see chapter 11), aimed in particular to shed light to the transition between the Late Borġ in-Nadur phase and the Baħrija period (henceforth Transitional Phase), hypothesizes for the former a time frame ranging from the mid-13th – mid-11th centuries BC and for the latter an extent from the mid-11th century up to arrival of the Phoenicians in the late 8th c. BC. Novel radiocarbon dates for the context of trench B at the Borġ in-Nadur settlement (layer 2), which has been previously interpreted as a Late Borġ in-Nadur-context, offered new data to the discussion (see chapter 9). The time frame of the Transitional Phase is contentious: Tanasi (2015) suggested it could have been taken place ‘much before the early 11th c. BC’, while Cazzella and Recchia contend it rather dates to the mid- 11th c. BC (see chapter 9). The radiocarbon date obtained for context of trench B – layer 2, 939-837 cal BC (sample 100122: Tanasi and Tykot in this volume), seems to suggest that instead the transition took place much later and that both those hypotheses need to be revised. This evidence still sits well with the idea that the Maltese-type materials found at Thapsos settlement in Sicily, in layers dated between the of the Cassibile culture and the initial part of the South Pantalica culture (Early Iron Age) were of Late Borġ in-Nadur type rather than Baħrija (see chapter 10).

The second radiocarbon date obtained, from the context of trench D – layer 5 of Trump’s excavation at Qleġġa tal-Baħrija offers a chronology of 860-807 cal BC (sample 100065A: see chapter 9). Trench D – layer 5 has to be interpreted as the layer preceding that *torba* floor (Grey Habitation soft) and hence marking the end of the first phase of occupation, which hypothetically could have been a straight Late Borġ in-Nadur phase, the second half of the 9th century would become the *terminus post quem* for the beginning of the Transitional Phase. In this perspective, the emergence of the Mature Baħrija-type would have to be postponed possibly to

the end of the 9th – beginning of the 8th centuries BC, eventually bridging the chronological gap with the Proto-Elymian pottery production and reinforcing the hypothesis of a major role played by agents from western Sicily in triggering the development of the Mature Baħrija style. Such a reconstruction sits well too with the discovery of Sicilian artefacts, a serpentine bow fibula with curved pin of Sicilian type and various fragments of plumed ware, in association with Mature Baħrija-type pottery at Tas-Silġ (see chapter 11), as such a discovery does not really help to pinpoint the emergence of such phenomenon, as both artefacts pertain to a phase between the end of the Cassibile period and the beginning of South Pantalica (1050 – 750 BC).

In this new perspective, Borġ in-Nadur and Baħrija clearly appear to be two distinct chronological periods (see chapter 11), rather than just different pottery types as proposed by Trump (1961; 2002, p. 274). Therefore, it is desirable that the term ‘period’ would be used to address internal distinctions (for example Early, Classic and Late Borġ in-Nadur, Transitional Phase, Mature Baħrija) within the ‘culture’ of Borġ in-Nadur, as we currently do not have evidence to characterize a distinct and separate ‘Baħrija culture’ (see introduction). Given this new suggested chronological sequence, it appears logical that the Borġ in-Nadur culture represents the Maltese Middle/Late Bronze Age and Iron Age (Table 3). It is obvious that once the radiocarbon dates announced from the excavation of Tas-Silġ North will finally be available, this picture shall be subject to further adjustments.

6.3 The Mature Baħrija repertoire

Although we are unable to better characterize the Transitional Phase without the support that a stratified context may offer, it is at least useful to attempt defining the repertoire of the Mature Baħrija pottery, guided by a series of parameters.

The first parameter is represented by the impressed decoration using punches and roulette wheels, previously absent in the Borġ in-Nadur period, where

Ages	Culture	Trump’s phases	Period	Hypothesized chronology
Middle/Late Bronze Age	Borġ in-Nadur		<i>Early Borġ in-Nadur</i>	end of 15th cent. – mid 13th cent. BC
		II B 1	<i>Classic Borġ in-Nadur</i>	
		II B 2 – II B 3	<i>Late Borġ in-Nadur</i>	post 1250 BC – 850/800 BC
Iron Age		II B 3 – II C 1	<i>Transitional phase</i>	850-800 BC / end of 9th – early 8th cent. BC
		II C 2	<i>Mature Baħrija</i>	end of 9th / early 8th cent. BC – 750/700 BC

Table 3. Hypothesized chronology for the sequence Late Borġ in-Nadur, Transitional, Mature and Baħrija phases.

just impressed decorations rarely occurred. The second is represented by the decorative motifs, now extremely complex in their geometry and combined in patterns that timidly appeared in embryo in some Late Borġ in-Nadur examples (see Figure 19 above). The third would be the uniform dark brown/black burnished slip which definitely takes the place of the red/black mottled, dark red, brown slips of the previous period. Another indicator is offered by the fabric. Petrographic fabric S1 is then the last and rather important indicator of the Mature Baħrija pottery.

On the basis of such guidelines, it is possible to identify some shapes which can be considered as typical of Mature Baħrija and supplement (if not revise) accordingly the repertoire of shapes identified by Evans in his typological study of Period II C pottery (Evans 1953) (see Figure 24 above).

Evans' Shape 109 corresponds to the bowls, which together with the dipper cups are the most emblematic shapes of the repertoire. Evans' Shape 110, 112, 113 and 114 are all related to profiles of dipper cup, although our study identified a larger typological range. Shape 111 reflects instead one of the types of cups in the category of Grey Ware. However, due to the strict relation of this class with similar productions of the Late Borġ in-Nadur period and the peculiar features of the carinated body and embossed base we are more inclined to consider the entire class as typical of the Transitional Phase. Evans' Shape 115 and 116, namely described as a 'flat bottomed dish with a plain lug-handle' and a 'conical cup' (Evans 1953, p. 74), do not correspond with any evidence we observed in this study and therefore their identification should be taken with a grain of salt. Juglets of Evans' type 118 and 119 are very likely represented by the examples we discussed before and they fit well with the Mature Baħrija repertoire. Doubtful is Evans' Shape 120, as such the typology of lids can easily be related to the Late Borġ in-Nadur period.

Not many shapes, in our opinion, can be added to this tentative repertoire. Definitely the class of decorated 'trays' has to be considered as an indicator of the Mature Baħrija period. It is possible that it escaped Evans' analysis due to the very poor condition of the extant examples. Also, typical of this repertoire are the vessels with theriomorphic spouts ('becco ansa' for Evans), the lids with plastic knobs and the cylindrical strainer vessels, all too fragmentary to provide clear typological references. Although other scholars sustain the hypothesis that Dribbled and Painted Ware, as defined on the basis of the study of the materials from Borġ in-Nadur settlement (Tanasi 2015), should also be connected with Baħrija pottery production (see chapter 11), it remains our opinion that such a phenomenon should be instead related to the Late Borġ in-Nadur period only.

This brief survey of the repertoire, however, makes it truly evident how limited in number and variety is the Mature Baħrija repertoire in comparison with those of the previous Borġ in-Nadur periods: a fact which cannot be ignored. Although there are really no data to support it, a provocative hypothesis would be that the site of Qlejgha tal-Baħrija, during the Mature Baħrija period, was not a traditional settlement but rather a gathering place for specialized and 'ritual' practices which required only certain shapes of fine ware. That would explain the scarcity of coarse ware and the disproportionately high number of dipper cups in comparison with all the other shapes. The great concentration of objects related to textile activities (see chapter 4) could also be connected to similar practices, where 'ritual' is intended as repeated acts without any necessarily religious implications.

7. Final remarks

The reappraisal of the pottery from Qlejgha tal-Baħrija has helped to reconcile the recent reassessment of the Borġ in-Nadur sequence (Tanasi 2015) with the traditional reconstruction of the progression of the last phases of Period II offered by Trump (1961). In our opinion the distinction between II C 1 'Local Baħrija Ware' and II C 2 'Foreign Baħrija Ware' has to be dropped in favor of a distinction between a formative period of the Baħrija pottery production which runs in parallel with the terminal part of the Late Borġ in-Nadur period (Transitional Phase) and the full blossoming of Baħrija pottery production (Mature Baħrija). The foreign elements, which brought Trump and Evans before him (1953) to the formulation of a 'Foreign Baħrija' are rather spread out throughout the course of Late Borġ in-Nadur first and then the Baħrija period after without the possibility to truly pinpoint them to a specific time.

The other traditional idea of a 'II C immigration' phase (Trump 1961, p. 261) as being responsible for the beginning of the period characterized by the Baħrija pottery, at times linked to the Fossa Grave culture of southern Italy or to the Ausonian II culture of Sicily, should, in our opinion, also be dropped. Our study has clearly showed how Baħrija pottery is a Maltese indigenous phenomenon that has gradually developed from the previous experience of the Late Borġ in-Nadur production. Certainly, foreign contact with Sicilian and Aegean cultures could have facilitated such an evolutionary dynamic, but Maltese communities were always charged with what to choose and select among the external influxes and what to adopt and eventually reinterpret and what to reject.

On another note, our attempt at historical reconstruction remains irreconcilable with the interpretation of the archaeology of the very first half of 1st millennium in Malta, offered in the course of

numerous studies by Claudia Sagona (2002; 2008; 2011; 2015b). According to Sagona, the period comprised of the years 1000 BC to 700 BC would correspond to the first phase of the Phoenician-Punic occupation of the archipelago (Melita I) and consequently Trump's last stage of Period II B 2 would be characterized by the local imitations of Phoenician pottery, Phoenician influences on local production and even Phoenician imports (sic!). Furthermore, in such a formulation, the pottery of Trump's period II C would run in parallel with that of an early stage Period II B 2 in the time frame of 1250?-1000? BC. As stated, it is irreconcilable. In fact, the meticulous study of the pottery from Borġ in-Nadur temple and settlement and related reassessment of the contexts conducted in the past (Tanasi 2011 and Tanasi 2015) and the current thorough analysis of the ceramics from Qlejġha tal-Bahrija and of Trump's excavation serve, in our opinion, to set the facts straight.

A crucial point in Sagona's work, despite all the limitations, is the attempt to define the dynamics which govern the contact with first Phoenician settlers and local indigenous communities and to characterize the cultural profile of those first settlers, which does not clearly transpire from the ceramic evidence. It is obvious that the Phoenician pottery repertoire did not simply replace overnight the Mature Bahrija production. Such a process must have happened gradually and with a variety of attempts and failed outcomes in the frame of active negotiations between Maltese and Phoenician actors. But where is that evidence? Possibly that evidence must be found at a different site. Possibly the role that Borġ in-Nadur and Qlejġha tal-Bahrija played up to the end of the 8th c. BC ended and another site took the lead. Possibly Tas-Silġ, which later became a remarkable Phoenician site, would offer answers to our questions. Or possibly, that evidence is sealed under over a millennium of urban stratigraphy somewhere else in Malta or Gozo.

The benefits of the reappraisal of legacy data from old Bronze and Iron Age excavations (Borġ in-Nadur, In-Nuffara, Għar Mirdum, Qlejġha tal-Bahrija, Mtarfa, Tas-Silġ) have been, in recent years, truly enormous, reinvigorating a research in the field of Maltese archaeology that has traditionally been side lined in favour of other periods of Malta's history. The greatest achievement is to have put a spotlight on such period, captivating a new generation of Maltese scholars who are eager now more than ever to start new excavations and research. And those new excavations and research will bear the answers to our latest questions still left answered.

References

- Barone, G., Mazzoleni, P., Raneri, S., Tanasi, D. and Giuffrida, A. 2015. Archaeometric Characterization of Middle Bronze Age Pottery from the Settlement at Borġ in-Nadur, in D. Tanasi and N. C. Vella (eds), *The late prehistory of Malta: Essays on Borġ in-Nadur and Other Sites*, Oxford: Archaeopress, pp. 99-111.
- Bonanno, A. 2017. From Prehistoric to Historic Malta: a Discussion of the Sources, in D. Mizzi, N. C. Vella, M. R. Zammit, A. J. Frendo (eds), *'What mean these stones?' (Joshua 4:6, 21): essays on texts, philology, and archaeology in honour of Anthony J. Frendo*, Leuven: Peeters, pp. 243-254.
- Briffa, J. M., Sagona, C. 2017. *Catalogue of Artefacts from Malta in the British Museum*, Oxford: Archaeopress.
- Cazzella, A., Recchia, G. 2011. Maltese Late Prehistoric Ceramic Sequence and Chronology: On-Going Problems, in C. Sagona (ed.), *Ceramics of the Phoenician-Punic World: Collected Essays*, Leuven: Peeters, pp. 373-395.
- Evans, J. D. 1953. The Prehistoric Culture-Sequence in the Maltese Archipelago, *Proceedings of the Prehistoric Society* 19, pp. 41-94.
- Evans, J. D. 1971. *The Prehistoric Antiquities of the Maltese Islands. A Survey*, London: Athlone.
- Hayden, B. J. 1991. Terracotta Figures, Figurines, and Vase Attachments from Vrokastro, Crete, *Hesperia* 60.1, pp. 103-144.
- Leighton, R. 1981. Strainer-spouted jugs and the problem of the earliest Phoenician influence in Sicily, *Journal of Mediterranean Anthropology and Archaeology* 1, pp. 280-291.
- Peet, T. E. 1910. Contributions to the study of the Prehistoric Period in Malta, *Papers of the British School at Rome* 5, pp. 141-163.
- Pirone, F., Tykot, R. H. 2017. Trace Elemental Characterization of Maltese Pottery from the Late Neolithic to Middle Bronze Age, *Open Archaeology* 3, pp. 202-221.
- Trump, D. H. 1961. The Later Prehistory of Malta, *Proceedings of the Prehistoric Society* 27, pp. 253-262.
- Sagona, C. 1999. Silo or vat? Observations on the ancient textile industry in Malta and early Phoenician Interests in the Island. *Oxford Journal of Archaeology* 18.1, pp. 23-60.
- Sagona, C. 2002. *The Archaeology of Punic Malta*, Leuven: Peeters.
- Sagona, C. 2008. Malta: Between and rock and a hard place, in *Beyond the Homeland: Markers in Phoenician Chronology*, (ed.), C. Sagona. (Ancient Near Eastern Studies Supplement 28). Louvain: Peeters, pp. 487-536.
- Sagona, C. 2011. Observations on the Late Bronze Age and Phoenician-Punic Pottery in Malta, in C. Sagona (ed.), *Ceramics of the Phoenician-Punic World: Collected Essays*, Leuven: Peeters, pp. 397-432.
- Sagona, C. 2015a. The Pottery, in *Tas-Silġ, Marsaxlokk (Malta): Archaeological Excavations Conducted by the University of Malta, 1996-2005*. Vol. 2 (Ancient Near Eastern Studies Supplement 49), in A. Bonanno and N. C. Vella (eds), Leuven: Peeters, pp. 1-513.

- Sagona, C. 2015b. *The Archaeology of Malta from Neolithic Through the Roman Period*, New York: Cambridge University Press.
- Tanasi, D. 2004. Per un riesame degli elementi di tipo miceneo nella cultura di Pantalica Nord, in V. La Rosa (ed.), *Le presenze micenee nel territorio siracusano*, Padova: Bottega D'Erasmus, pp. 337-383.
- Tanasi, D. 2008. *La Sicilia e l'arcipelago maltese nell'età del Bronzo Medio*, Palermo: Officina Studi Medievali.
- Tanasi, D. 2009. A Mediterranean Connection. Nuovi dati sulle relazioni tra Malta e Creta agli inizi dell'età del Ferro, *Creta Antica* 10.2, pp. 519-538.
- Tanasi, D. 2011. The Prehistoric Pottery, in D. Tanasi, N. C. Vella (eds), *Site, Artefacts, Landscape: Prehistoric Borġ in-Nadur, Malta*, Oxford: Archaeopress Open Source, pp. 71-158.
- Tanasi, D. 2013, Prehistoric Painted Pottery in Malta: One century later, *Malta Archaeological Review* 2008-2009, pp. 5-13.
- Tanasi, D. 2015. The pottery from the excavation campaign of David H. Trump (1959) at the settlement of Borġ in-Nadur, in D. Tanasi, N. C. Vella (eds), *The late prehistory of Malta: essays on Borġ in-Nadur and other sites*, Oxford: Archaeopress 2015, pp. 35-98.
- Tanasi, D., Vella, N. C. (eds), *Site, Artefacts, Landscape: Prehistoric Borġ in-Nadur, Malta*, Oxford: Archaeopress Open Source.
- Tanasi, D., Vella, N. C. (eds), *The late prehistory of Malta: essays on Borġ in-Nadur and other sites*, Oxford: Archaeopress 2015.
- Tusa, S. 1992. La 'problematica elima' e testimonianze archeologiche da Marsala, Paceco, Trapani e Buseto Polizzolo, *Sicilia Archeologica* 78-79: pp. 71-102.
- Vella, N. C., Tanasi, D., Anastasi, M. 2011. Mobility and transitions: the south-central Mediterranean on the eve of history, in Tanasi, D., Vella, N. C. (eds), *Site, Artefacts and Landscape. Prehistoric Borġ in-Nadur, Malta*, Monza: Polimetrica, pp. 251-282.
- Vella, N. C., Mason, S., Farruggia, R., Zammit, MariaElena 2015. The Stratigraphy, in A. Bonanno, N. C. Vella (eds) *Tas-Silġ, Marsaxlokk (Malta) I: Archaeological Excavations conducted by the University of Malta, 1996-2005*, Leuven: Peeters, pp. 45-230.

Textile tools and terracotta figurines from Prehistoric Qlejgha tal-Bahrija

Carlo Veca

1. Introduction

This chapter examines some classes of artefacts recovered from the excavations of the prehistoric site at Qlejgha tal-Bahrija (Peet 1910; Trump 1961). In this study, we will consider 165 terracotta objects, including 59 loom weights, 57 spindle whorls, 24 beads, 19 'clay anchors', 2 terracotta figurines and 4 other terracotta items. The description of the objects was made following a thorough visual examination at the National Museum of Archaeology, Valletta. New illustrations were drawn, including, in a few instances, pieces that had already been published. The inventory number was recorded when this had been written in ink on the object (abbreviations: B/P[ottery]). In the cases when one inventory number was found to correspond to several objects, a letter was added (a, b, c, etc.) following instructions received from the Senior Curator in charge of the collection. Based on the class of the artefacts, the chapter is thus divided in six sections: loom weights, spindle whorls, beads, 'clay anchors', terracotta figurines and other terracotta items.

In his published excavation report, Peet describes and illustrates some loom weights and spindle whorls found (Peet 1910, pp. 154-155, pl. XIV n. 35-38, 40, 41-43); Trump presented other loom weights (Trump 1961, pl. XVI, top). The so called 'clay anchors' were just illustrated by Peet, but not discussed (Peet 1910, pl. XV, pp. 52, 61, 64, 69). After Peet, Murray illustrated eight fragments of 'clay anchors' (Murray 1929, pl. XXVIII, pp. 10-17). Concerning other objects covered in this contribution, the terracotta heads found in the excavation by Peet discussed by Evans. In particular, he classifies the specimen B/P1001 as 'B/P1000' (Evans 1971, pl. 43, 10); whereas the specimen B/P046 is listed as 'B/P1001' (Evans 1971, pl. 43, 12). Another terracotta head, B/P1354, was found during Trump's excavation and also photographically documented (Trump 1961, pl. XVI, bottom right).

2. Loom weights

There are numerous artefacts from Qlejgha tal-Bahrija that may be identified as loom weights (Table 1).

Loom weights (Figures 2-3, 6) are elements that form part of the vertical weight frame (Broudy 1993). They are inserted into the loom to stretch the warp, and different weights could be used. Each weight is tied with a number of threads calculated on the weight of the specimen and the resistance of the thread used (Barber 1992). The weight of the single element is therefore not influential; what matters is the total weight of the elements in a loom, which varies depending on the fabric being produced and would indicate that the greater the weight, the denser the fabric to be made and vice versa (Bianchi 2003, p. 636; Andersson Strand *et al.* 2009). A set of loom weights should be around 6/30 pieces. The most important parameters – weight and thickness of the object – affect the outcome of the weave (Gleba, Mannering 2012, pp. 15-16). On the basis of the expected result, a thin thread requires less warp tension than a thicker thread (Andersson 2015, p. 53).

For the classification of the artefacts, the following parameters, inspired from several studies of the Centre for Textile Research (<https://ctr.hum.ku.dk>), were taken into consideration: *typology, weight, signs and decorations*.

Regarding the first parameter – typology – the following types have been identified (Figure 1a): *Conical* (C) (25 specimens), flat base, circular section, horizontal hole perforation in the upper end; a single specimen with a concave base (100000k); *Truncated-Conical* (TC) (14 specimens), flat base, circular section, horizontal hole perforation in the upper end; *Pyramidal* (P) (20 specimens), flat base, quadrangular section, horizontal hole perforation in the upper end; *Rectangular* (R) (4 specimens), flat base, quadrangular section, horizontal hole perforation in the upper end; *Bullet* (B) (1 specimen), flat base, circular section, horizontal hole perforation in the upper end.

The specimens considered (Figures 4a-b, 5) have a height ranging from 5.5 to 8.5 cm, with a greater attestation between 6-6.8 and 7-7.8 cm. The thickness can range from 3.4 to 5.1 cm, with a greater frequency around 3.8-4.8 cm. The suspension hole is always centred and horizontal, and stands at values around 0.3-0.5 cm. Only one specimen has the suspension hole

Loom Weights							
Object ID	Inv. no.	Type	Weight [gr]	Hole [cm]	Height [cm]	Thick [cm]	Paint/Dec
100000 (a)	B/P1036 (a)	Conical	92	0.4	7	4.2	P
100000 (b)	B/P1036 (b)	Truncated-Conical	102	0.4	6	4.4	P
100000 (c)	B/P1036 (c)	Conical	97	0.4	7.5	4	
100000 (d)	B/P1036 (d)	Truncated-Conical	86	0.4	6.8	4.1	P
100000 (e)	B/P1036 (e)	Conical	78	0.3	6.8	4.5	P/D
100000 (f)	B/P1036 (f)	Conical	83	0.4	7.2	4	P
100000 (g)	B/P1036 (g)	Truncated-Conical	71 (fr)	0.3	6.8	4.5	P
100000 (h)	B/P1036 (h)	Conical	60	0.5	6.4	3.5	P
100000 (i)	B/P1036 (i)	Conical	119	0.3	6.4	5.1	P
100000 (j)	B/P1036 (j)	Conical	104	0.4	7.4	4.4	P
100000 (k)	B/P1036 (k)	Conical	99	0.4	6.8	4.6	P
100000 (l)	B/P1036 (l)	Conical	96	0.4	6.7	4	P/D
100000 (m)	B/P1036 (m)	Conical	94	0.4	7.5	4.1	P
100000 (n)	B/P1036 (n)	Conical	64	0.3	5.8	3.8	/
100000 (o)	B/P1036 (o)	Conical	53 (fr)	0.4	6.5	4.1	/
100002 (a)	B/P1038 (a)	Truncated-Conical	72 (fr)	0.3	5.5	3.5	/
100002 (b)	B/P1038 (b)	Conical	47 (fr)	0.4	6.2	3.8	/
100002 (c)	B/P1038 (c)	Conical	67 (fr)	0.3	7.3	4.6	/
100002 (d)	B/P1038 (d)	Bullet	63 (fr)	0.3	6	4.6	P
100002 (e)	B/P1038 (e)	Truncated-Conical	60 (fr)	0.3	7.2	4.2	P/D
100002 (f)	B/P1038 (f)	Conical	91 (fr)	0.4	7.2	4.2	P
100002 (g)	B/P1038 (g)	Conical	71 (fr)	0.5	6.5	4.4	P
100002 (h)	B/P1038 (h)	Truncated-Conical	73 (fr)	0.3	7.5	4.2	P
100002 (i)	B/P1038 (i)	Truncated-Conical	80 (fr)	0.4	6	4.2	P
100002 (j)	B/P1038 (j)	Truncated-Conical	93 (fr)	0.4	6.5	4.7	P
100002 (k)	B/P1038 (k)	Truncated-Conical	74 (fr)	0.5	6.4	4	D
100002 (l)	B/P1038 (l)	Conical	82 (fr)	0.3	7.3	4	D
100002 (m)	B/P1038 (m)	Conical	62 (fr)	0.3	6	4.6	/
100002 (n)	B/P1038 (n)	Conical	84	0.4	6	4.6	P
100003 (a)	B/P1037 (a)	Truncated-Conical	77	0.3	7	5	P
100003 (b)	B/P1037 (b)	Truncated-Conical	103	0.3	7.4	4	P
100003 (c)	B/P1037 (c)	Truncated-Conical	78 (fr)	0.5	7.1	5	/
100003 (d)	B/P1037 (d)	Truncated-Conical	99	0.5	6.8	4.1	/
100005 (a)	B/P1039 (a)	Conical	106	0.3	6.5	3.8	P/D
100005 (b)	B/P1039 (b)	Conical	98	0.5	7	3.4	P/D
100066	B/P509	Conical	106	0.4	7	3.8	/
100001 (a)	B/P1035 (a)	Pyramidal	78 (fr)	0.4	7.3	3.8	P
100001 (b)	B/P1035 (b)	Pyramidal	80	0.5	6.2	4.1	/
100001 (c)	B/P1035 (c)	Rectangular	98 (fr)	0.4	7.8	3.9	/
100001 (d)	B/P1035 (d)	Pyramidal	83 (fr)	0.5	8.2	4	/
100001 (e)	B/P1035 (e)	Pyramidal	73	0.4	7	3.5	/
100001 (f)	B/P1035 (f)	Pyramidal	100 (fr)	0.4	6.8	4	/

Table 1. Loom weights from Qlejgha tal-Bahrija.

Loom Weights							
Object ID	Inv. no.	Type	Weight [gr]	Hole [cm]	Height [cm]	Thick [cm]	Paint/Dec
100001 (g)	B/P1035 (g)	Pyramidal	97	0.4	6	4.4	/
100001 (h)	B/P1035 (h)	Pyramidal	133	0.3	7.7	3.8	/
100001 (i)	B/P1035 (i)	Rectangular	66 (fr)	0.4	7.5	3.6	/
100001 (j)	B/P1035 (j)	Pyramidal	48 (fr)	0.5	7.6	3.8	/
100001 (k)	B/P1035 (k)	Pyramidal	96 (fr)	0.5	6.3	4.2	P/D
100001 (m)	B/P1035 (m)	Pyramidal	18 (fr)	0.4	5.6	4.2	/
100004 (a)	B/P1034 (a)	Rectangular	97	0.3	8.5	3.2	/
100004 (b)	B/P1034 (b)	Pyramidal	52 (fr)	0.5	7	5	D
100004 (c)	B/P1034 (c)	Pyramidal	26 (fr)	0.4	6.4	5.1	/
100004 (d)	B/P1034 (d)	Pyramidal	60 (fr)	0.5	7.4	4.4	/
100007	B/P1031	Pyramidal	102 (fr)	0.4	7.5	4.1	D
–	B/P1636	Conical	112	0.5	5.8	3.8	/
2672		Pyramidal	129	0.3	6.5	4.1	/
2678	B/P1036	Truncated-Conical	100	0.4	6.2	3.8	P
2690	B/P1036	Conical	72 (fr)	0.3	7.3	4.6	/
2675		Conical	82	0.3	6	4.6	/
–	B/P1034	Pyramidal	105	0.5	7.2	4.2	/
–	B/P1041	Rectangular	73 (fr)	0.5	7.2	4.2	/

Table 1. Continued.

of 1 cm (100007). Regarding the weight, the specimens average between 50 and 100 g, with only four specimens exceeding 100 g by far (100000i; 100001 f, h; 2672). Based on the determination of the weight of all the complete or restorable specimens (52 specimens), it is possible to distinguish three main weight categories: *Lightweights* (< 80 g); *Midweights* (80-119 g); *Heavy* (> 120 g).

The analysis carried out (Figure 1b) shows that lightweights, with 10 specimens, represent 19% of the sample. The midweights represent the most represented category, with 37 specimens (71%). The heavy ones are poorly represented, with just 4 specimens (around 10%).

Of the total sample of finds (always considering the whole and restorable ones), the lightweight examples are mostly Conical (60%) and Truncated-Conical (30%); the only Bullet type specimen is also represented. The midweight finds are mainly Conical (40%), Truncated-Conical (26.5%) and Pyramidal (23.5%); there are also two medium weight rectangular specimens (6%). The heavy finds (4) are all of the Pyramidal type.

As for the third point of the classification – decorations and signs – through the entire assemblage of 63 loom weights from Qlejgha tal-Bahrija, 25 specimens (39%) have a Borġ in-Nadur style painted decoration. Excluding the four Pyramidal specimens with this type

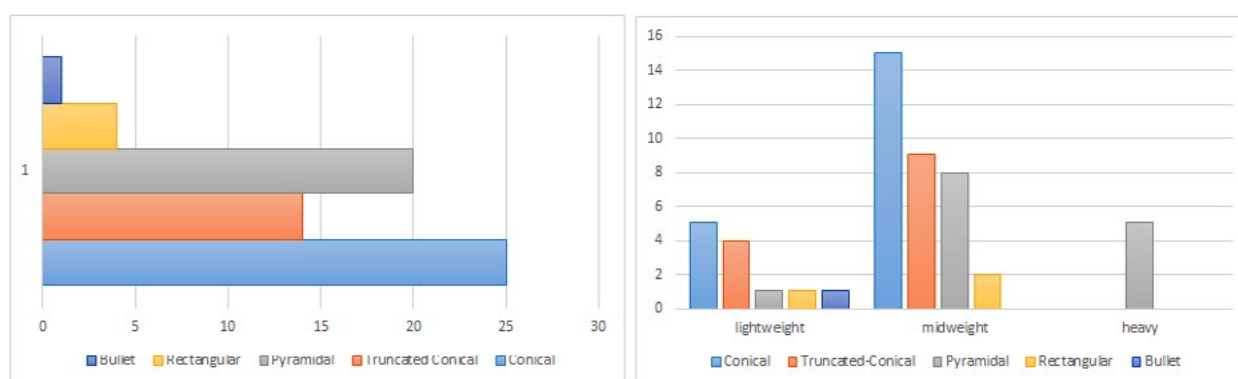


Figure 1a-b. Loom weights: typology and weight.

of decoration, most of the painted sample is of the Conical and Truncated-Conical type.

With regards to the other types of decoration (see Table 1), two groups of decoration can be distinguished: embossed/engraved and plastic. As for the first group, there are impressed circles on the body and the base (100002 e; 100002 l); vertical incised line on the body (100002 k); and above all the two Borġ in-Nadur painted styles, one with an incised cross on the base (100005 a); the other one (100005 b) with an incised swastika on the base. Another object (100007) has instead an incised cross on the top. As for plastic decoration, there are two specimens with five (100001 k) and three (100004 b) impressed dots (3 mm) on the base.

3. Spindle whorls

Spindle whorls are small circular-based objects characterized by a central longitudinal hole, linked to spinning and therefore to the preparation of the thread for the processing of textiles. It is noted that the spinning is done by twisting a spindle, a stick weighted with a whorl (Forbes 1956, p. 152; Barber 1992; Bazzanella-Mayr 1999), placed on top or bottom. The weight and dimensions of the spindles whorls determine the thickness of the yarn and these parameters differ according to the fiber chosen for the spinning (Gleba-Mannering 2012, pp. 9-10; Kossowska-Janik 2016, p. 107). As is known, for fragile fibers, like cotton (Smith-Hirth 1988), a lighter whorl prevents the fibers from breaking, and support spinning provides the spinner with more control over the whorl (Carpenter *et al.* 2012, p. 386).

There are 57 possible terracotta spindle whorls from Qlejġha tal-Baħrija (Table 2), a large number that allowed a detailed technical and quantitative analysis, in comparison to the scarcity of studies in Malta. The sample considered (Figures 8-9) ranges in preservation from half to intact. In the case of fragmentary specimens, the original dimensions were reconstructed. The general criteria for distinguishing spindle whorls from other artefacts, according to Barber (1992) are: maximum weight 91 g; larger diameter 5.6 cm, and average hole diameter 0.4-0.9 cm.

The type and dimensions (weight, diameter and height) have been taken into consideration for the classification of the specimens. Regarding the first criterion, the types have been identified are the following (Figure 7.1): *conical* (C); *biconical* (B); *globular* (G); *ovoid* (O).

With respect to the dimensions, the weight of the whole specimens was recorded and, where possible, the weight was reconstructed for the artefacts that were preserved for a quarter or half. The parameter 'weight' is related to the diameter/height ratio. By

convention, the weight is rounded to the gram, while for the diameter/height ratio only the first three digits after the comma have been considered, rounding each time.

Based on the weight and on the diameter/height ratio, it is possible to order the spindle whorls according to the following groups: (Figure 7.2): *lightweights* (weight 18-32 g – Ø/H between 1-1.1 e 2); *midweights* (weight 31-50 g – Ø/H 1.3-1.5); *medium heavy* (weight 40-66 g – Ø/H between 1.2-1.4 e 1.7-1.8); *heavy* (weight 78-91 g – Ø/H 1.4 e 1.6).

Considering the type and dimensions (Figures 10-12), it is possible to say that conical spindle whorls are poorly represented (3.5%), with only 2 specimens with an average weight of 44-45 g, a height from 3.6 to 4.3 cm and Ø/H ratio of 1.5. Following them, in increasing order of presence, are the ovoid spindle whorls (10), represent 17.5% of the assemblage, weighing between 28-58 g (with the only exception of B/P1007 a, which is a heavy spindle whorl of 91 g), a diameter of 4-5 cm, a height ranging from 2.1 to 3.4 cm and Ø/H ratio of 1.8. The other two types, biconical and globular, are the most represented. Biconical spindle whorls, with 23 specimens, represent 40% of the sample, weighing between 17-38 g (with three exceptions of 48, 66 and 75 g), diameter of 3.1-4.7 cm, height of 2.1-4.2 cm and Ø/H ratio of 1.1-1.7. The 22 globular spindles whorls (38.5%) weigh between 24-55 g (with some exceptions of heavy spindles around 80-90 g), a diameter between 2.5-4.7 cm, a height 2.7-3.5 cm and Ø/H ratio between 1-1.5.

From the study carried out, no particular decorative motifs emerge. Only two elements (3.5% of the total) are painted in the Borġ in-Nadur style (B/P1006 m; B/P1003 c). The preponderance of light or medium spindles is evident (with the exception of the presence of heavy spindles), with recurrent dimensional characteristics (Ø/H ratio). This occurrence could indicate homogeneity of the type of fiber to be spun. The exceptions of heavy spindle whorls could instead indicate a spinning of more resistant fibers (Barber 1992, pp. 52-53).

4. Beads

Another category of artefacts, which can sometimes be associated or mixed with spindle whorls, is the terracotta bead (Table 3). In the case of the Qlejġha tal-Baħrija context, they can be distinguished from spindle whorls by their weight and the constant presence of engraved or impressed decoration (Figure 13).

As for the spindles, the type and dimensions (weight, diameter and height) are the criteria that were also taken into consideration for the classification of the

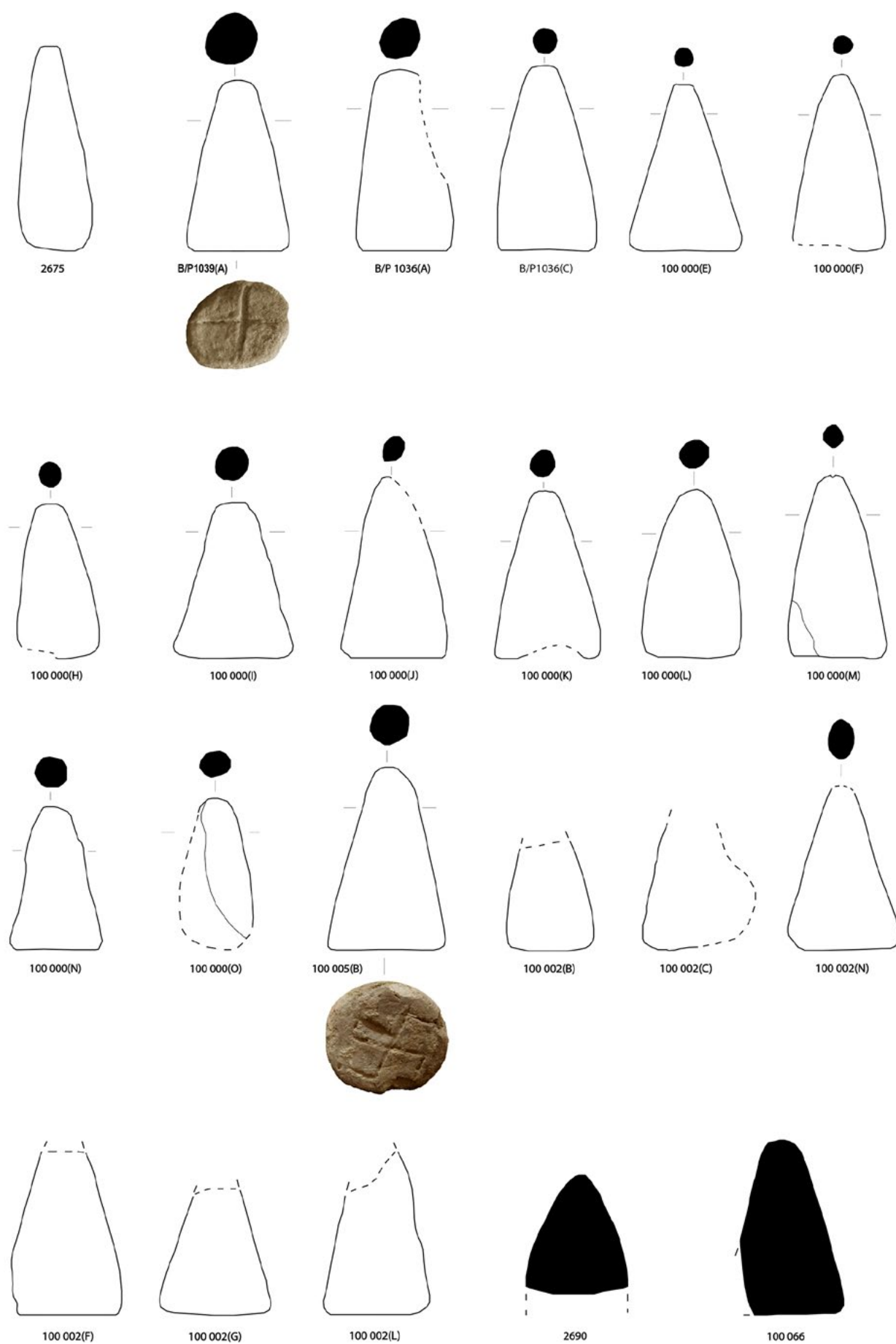


Figure 2. Conical loom weights (scale 1:2).

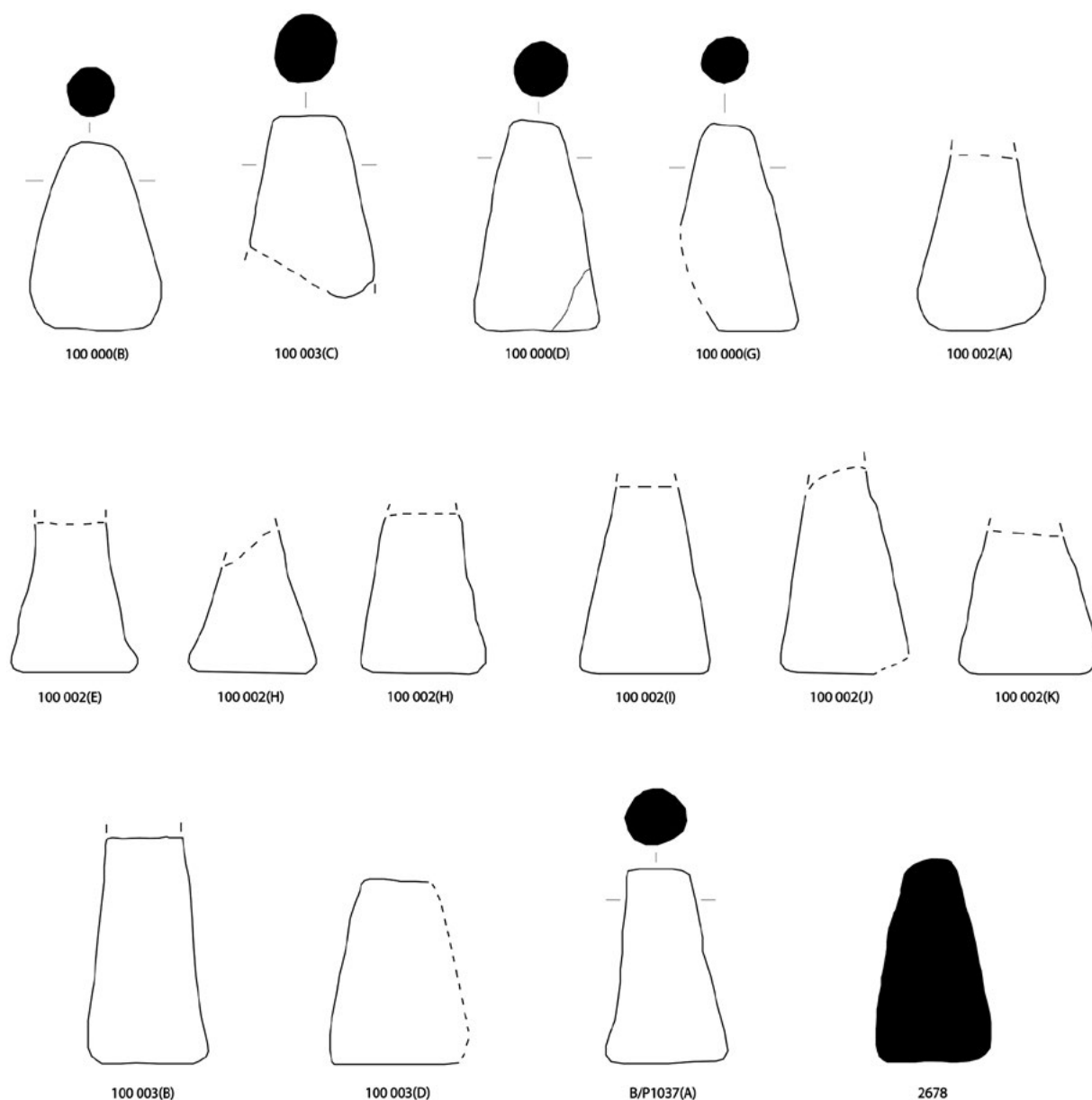


Figure 3. Truncated-conical loom weights (scale 1:2).

beads. From a typological point of view, two types have been distinguished: *biconical* and *globular*.

Based on the weight average and the larger diameter/height ratio, two groups were identified: *super light beads*, with a weight always < 20 g, usually between 8-18g (\emptyset/H ratio 1 and between 1.1-1.4); *light beads*, with a weight \leq 20 g, between 20-34 g (\emptyset/H ratio 1.5 and 1.5).

As an exception to these is a medium heavy bead (41 g, \emptyset/H 1.3), and another for its particular disc shape (20 g, but with a \emptyset/H ratio of 2.4).

Of the 24 beads considered, 7 specimens (29%) have a painted decoration of Borġ in-Nadur style (100019; B/P1005; B/P1017; B/P1013 a-b; B/P10005; B/P1014).

Among the beads, those that stand out for their lobe decoration or engraved/impressed decoration, there are the following specimens: 100019, incised multiple angles; 100020e, decoration with five lobes; 100021 (B/P1005), grooves; B/P1016, decoration with seven lobes; B/P1014 a-b (2654-2698), incised multiple angles; B/P1015 (2695), five series of dots forming triangles.

No particular relationships between type and the decoration emerge.

5. Clay anchors

The so-called anchor is a small anchor-shaped object, formed by a body and two arms. This terracotta object has traces of curved or crossed grooves in the inner part

Figure 4a-b. Loom weights.
1) Height and weight ratio;
2) Thickness and weight ratio.

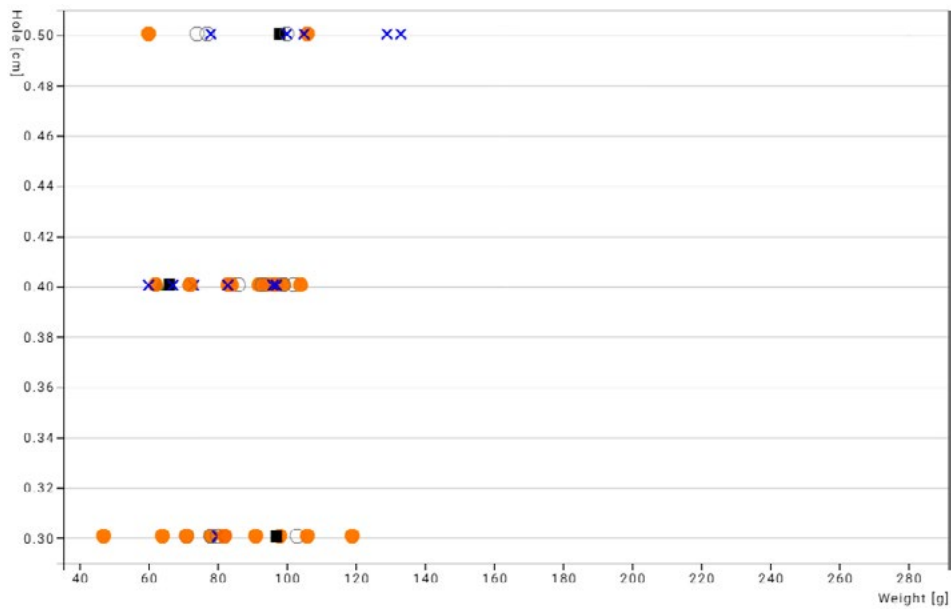
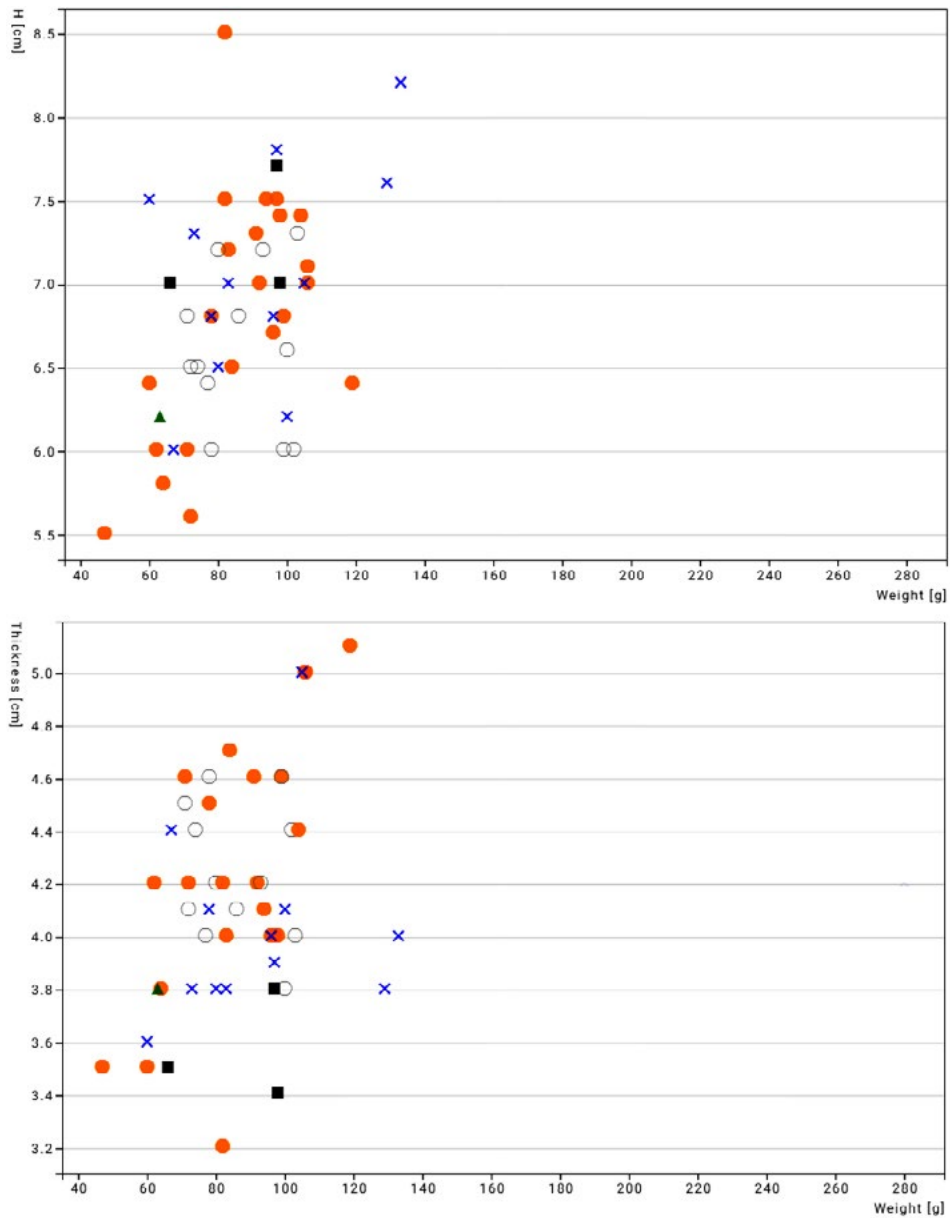


Figure 5. Loom weights,
hole perforation and
weight ratio.

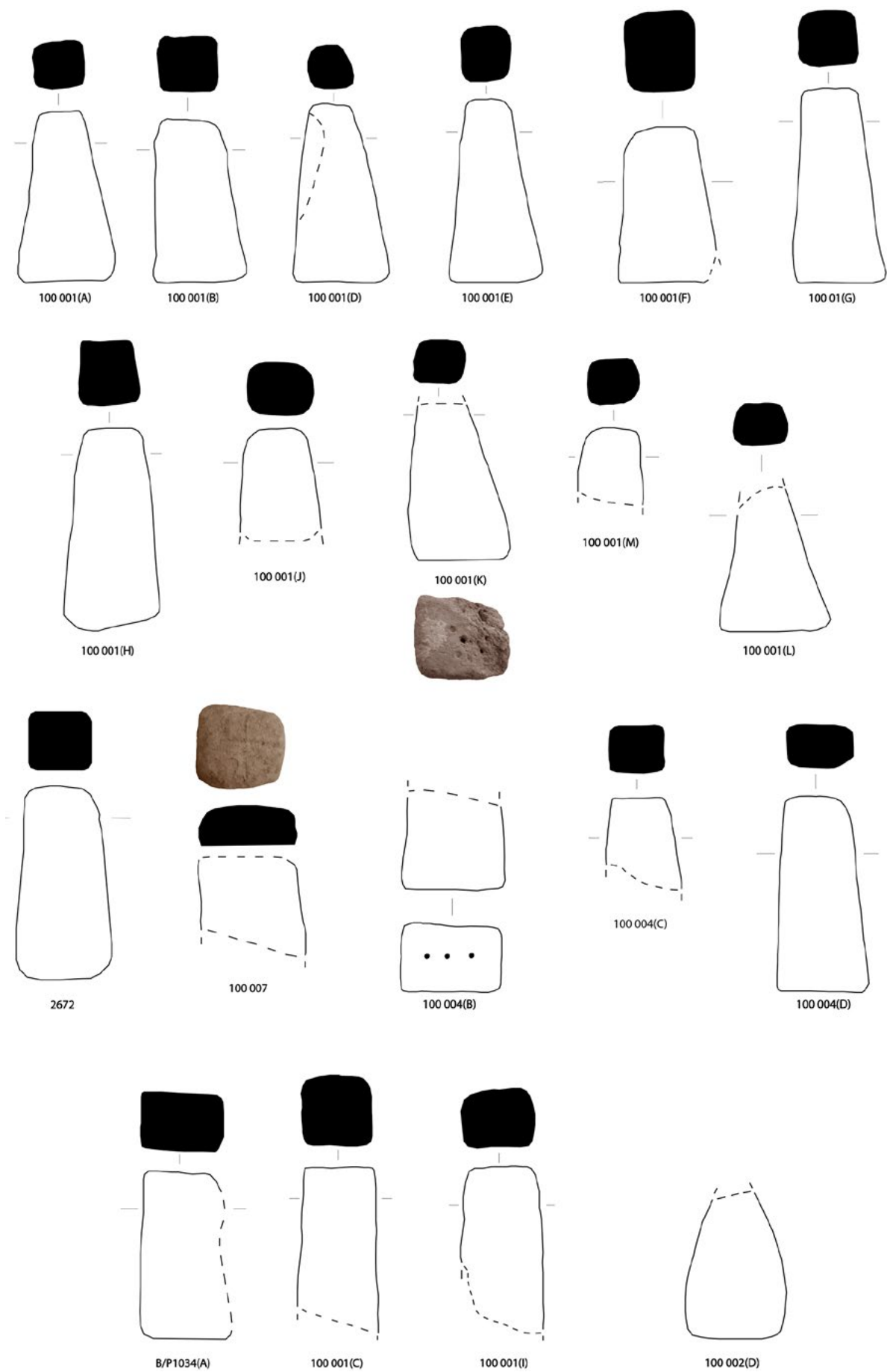


Figure 6. Pyramidal, Rectangular and Bullet loom weights (scale 1:2).

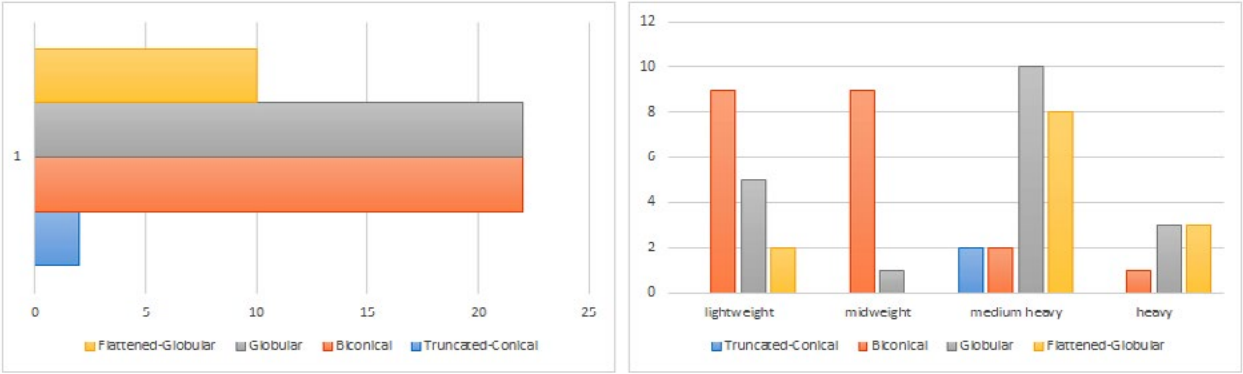


Figure 7. Spindle whorls: typology and weight.

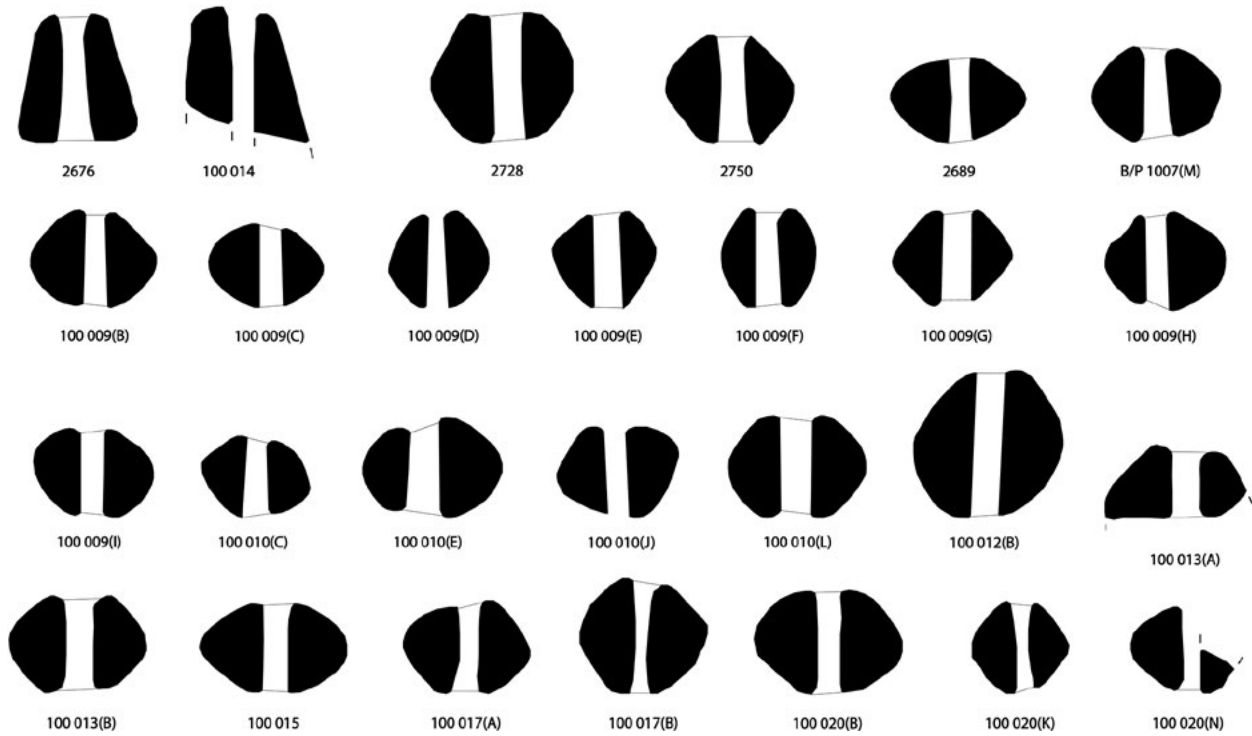


Figure 8. Conical and Biconical spindle whorls (scale 1:2).

Spindle Whorls							
Object ID	Inv. no.	Type	Weight [gr]	Ø [cm]	Height [cm]	Thick [cm]	Paint/Dec
100009	B/P1007 (a)	Ovoid	91	5.6	3.4	/	/
	B/P1007 (b)	Biconical	33	3.9	2.8	/	/
	B/P1007 (c)	Biconical	17	3.4	2.1	/	/
	B/P1007 (d)	Biconical	20	3.2	2.8	/	/
	B/P1007 (e)	Biconical	20	3.6	2.7	/	/
	B/P1007 (f)	Biconical	25	3.4	3.1	/	/
	B/P1007 (g)	Biconical	29	4.1	2.1	/	/
	B/P1007 (h)	Biconical	38	4.1	3.1	/	/
	B/P1007 (i)	Globular	28	3.7	3.5	/	/
	B/P1007 (j)	Globular	26	3.4	3.2	/	/
	B/P1007 (l)	Ovoid	28	4.1	2.1	/	/
	B/P1007 (m)	Biconical	33	4	2.8	/	/

Table 2. Spindle whorls from Qlejgha tal-Bahrija.

Spindle Whorls							
Object ID	Inv. no.	Type	Weight [gr]	Ø [cm]	Height [cm]	Thick [cm]	Paint/Dec
100010	B/P1006 (b)	Globular	24	2.5	2.7	/	/
	B/P1006 (c)	Biconical	18	3.2	2.3	/	/
	B/P1006 (d)	Globular	50	4.1	3.3	/	/
	B/P1006 (e)	Biconical	34	4.2	2.7	/	/
	B/P1006 (f)	Ovoid	20	3.7	3.4	/	/
	B/P1006 (g)	Ovoid	58	5	2.7	/	/
	B/P1006 (h)	Ovoid	55	4.5	2.6	/	/
	B/P1006 (i)	Globular	32	3.5	3	/	/
	B/P1006 (j)	Biconical	28	3.7	2.8	/	/
	B/P1006 (k)	Globular	57	4.7	3.3	/	/
	B/P1006 (l)	Biconical	34	4.2	3	/	/
	B/P1006 (m)	Ovoid	49	4.9	2.7	/	/
	B/P1006 (n)	Globular	32	4	2.8	/	P
100011	B/P1004 (a)	Globular	50	4.6	3	/	/
	B/P1004 (b)	Globular	53	4.3	3	/	/
	B/P1004 (c)	Globular	28	4.3	3	/	/
	B/P1004 (d)	Ovoid	52	4.8	2.8	/	/
	B/P1004 (e)	Ovoid	50	4.8	2.6	/	/
	B/P1004 (f)	Globular	78	5	3.6	/	/
100012	B/P1003 (a)	Globular	90	5.3	3.8	/	/
	B/P1003 (b)	Biconical	75	4.7	4.2	/	/
	B/P1003 (c)	Biconical	62	4.4	3.5	/	P
	B/P1003 (d)	Globular	47	4.4	3.1	/	/
	B/P1003 (e)	Globular	34	4.4	3.3	/	/
100013	B/P1008 (a)	Biconical	25	4.4	2.2	/	/
	B/P1008 (b)	Biconical	36	4.1	2.8	/	/
100014	B/P1009 (a)	Conical	45	4 low-2.2 top	4.3	/	/
100015	B/P1011	Biconical	28	4.2	2.4	/	D
100017	B/P1013 (a)	Biconical	26	3.8	2.6	/	D
	B/P1013 (b)	Biconical	36	4	3.1	/	/
100018	B/P1001	Ovoid	50	4.8	2.6	/	/
100020	(a)	Globular	40	4.2	2.5	/	/
	(b)	Biconical	48	4.2	2.9	/	/
	(g)	Globular	37	4.4	2.7	/	/
	(h)	Globular	40	3.8	2.8	/	/
	(j)	Globular	89	5.2	3.8	/	/
	(k)	Biconical	18	3.1	2.6	/	/
	(l)	Globular	31	4.3	3.2	/	/
	(n)	Biconical	19	3.9	2.6	/	/
	(o)	Globular	80	5.6	3.5	/	/
	(p)	Ovoid	57	4.9	2.8	/	/
	(q)	Globular	88	5	4	/	/
2750	B/P1009	Biconical	66	2.9 – 4	4.1	/	/
2688	B/P1603	Globular	55	4.1	3.2	/	/
2676	B/P1009 (b)	Conical	44	2.4/3.8	3.6	/	/

Table 2. Continued.

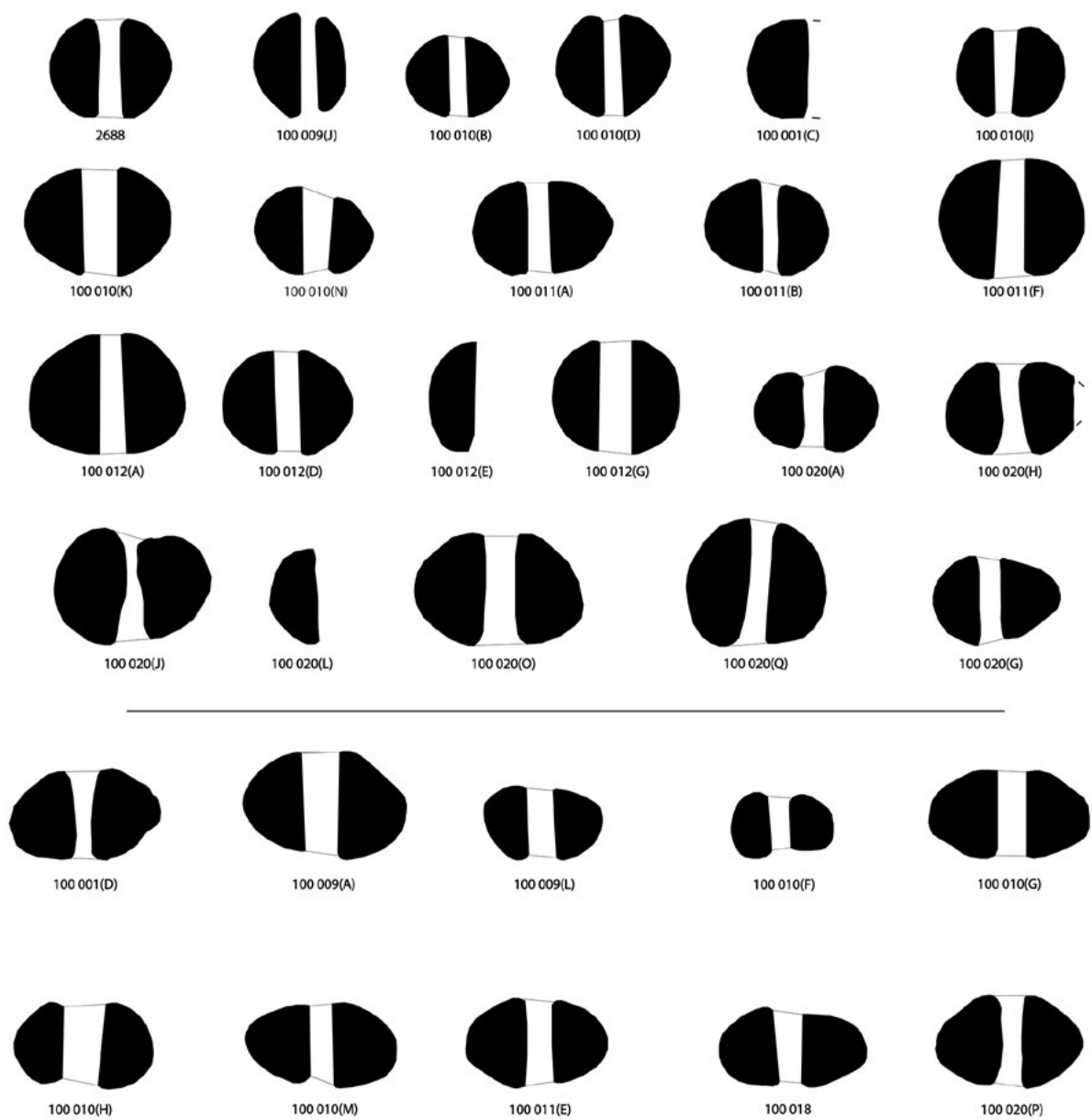
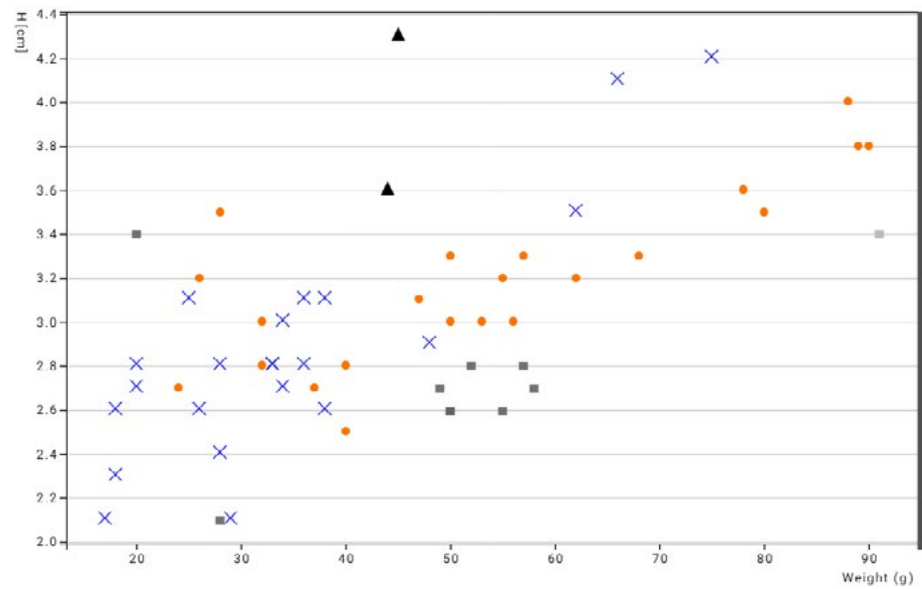


Figure 9. Globular and Ovoid spindle whorls (scale 1:2).

Figure 10. Spindle whorls.
Height and weight ratio (black:
Conical; blue: Biconical; orange:
Globular; grey: Ovoid).



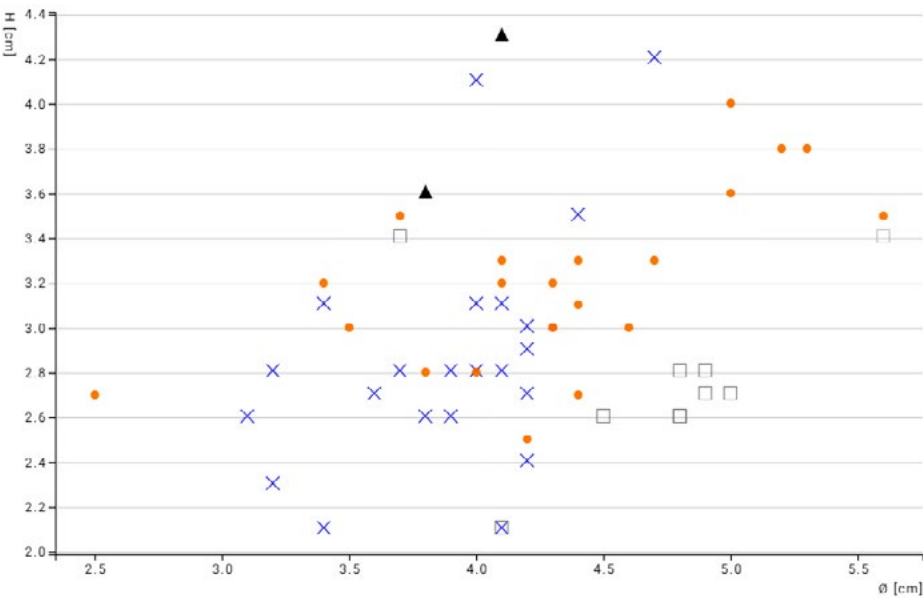
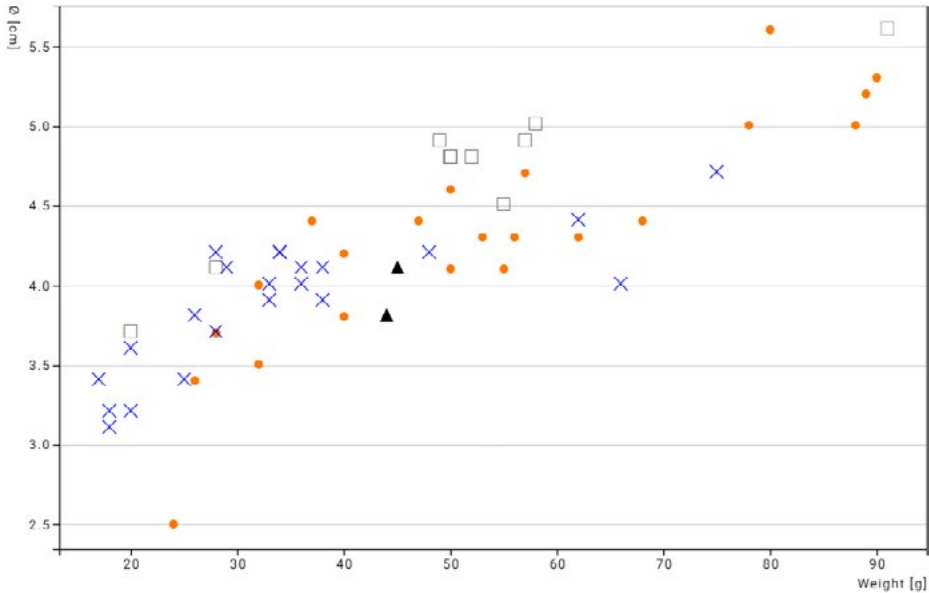


Figure 11. Spindle whorls.
Height and diameter
ratio (black: Conical; blue:
Biconical; orange: Globular;
grey: Ovoid).

Figure 12. Spindle whorls.
Diameter and weight
ratio (black: Conical; blue:
Biconical; orange: Globular;
grey: Ovoid).



Beads							
Object ID	Inv. no.	Type	Weight [gr]	Ø [cm]	Height [cm]	Thick [cm]	Paint/Dec
100009	B/P1007 (k)	Globular	9	2.8	2.1	/	/
100010	B/P1006 (a)	Globular	18	2.9	2.5	/	/
	B/P1008 (b)	Biconical	36	4.1	2.8	/	/
100016	B/P1012	Globular	9	2.5	2	/	/
100019		Biconical	13	2.8	2.5	/	P/D
100020	(c)	Biconical	21	3.4	2.8	/	/
	(d)	Biconical	22	3.4	2.7	/	/
	(e)	Globular	34	3.5	3.4	/	D
	(f)	Biconical	15	3	2	/	/
	(i)	Globular	10	2.4	2	/	/
	(m)	Biconical	21	3.3	2.1	/	/
	(r)	Globular	19	3.4	2.7	/	/

Table 3. Beads from Qlejgha tal-Bahrija.

Beads							
Object ID	Inv. no.	Type	Weight [gr]	Ø [cm]	Height [cm]	Thick [cm]	Paint/Dec
100021	B/P1005	Globular	13	2.8	2	/	P/D
	B/P1017	Bead	12	3	2.3	/	P
	B/P1010	Bead	20	4.2	1.7	/	/
	B/P1003	Bead	16	5.4	4.5	/	/
	B/P8505	Bead	41	4	3	/	/
	B/P1013a	Bead	12	2.7	1.9	/	P
	B/P1013b	Bead	16	3	2.7	/	P
	B/P1016	Globular	12	2.6	2.2	/	D
	B/P10005	Bead	8	2.3	1.7	/	P
2654	B/P1014	Biconical	28	3.4	3	/	P/D
2698	B/P1014	Biconical	9	2.2	2.2	/	D
2695	B/P1015	Biconical	19	3.4	2.6	/	D

Table 3. Continued.

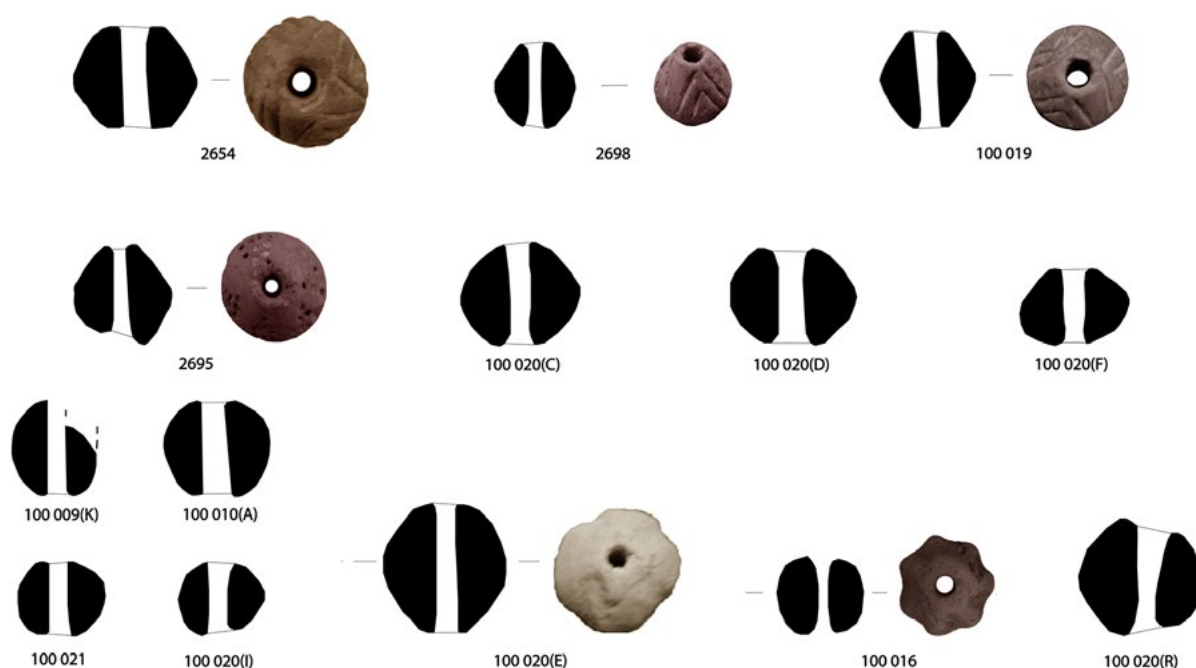


Figure 13. Biconical and Globular beads (scale 1:2).

of the 'shanks', perhaps caused by the constant friction of a thong that was tied to it or impressed before firing.

Of 19 'clay anchors' from Bahrija (Table 4), seven specimens are painted in Borg in-Nadur style (100022 b; B/P1027 b; B/P1026 b; B/P1033 b; B/P1024; B/P1025; B/P507).

Four specimens (B/P1089, B/59P/5, B/P806, B/P507) have crossed engravings on the arms and rubbing traces; two others show only the traces of rubbing (B/P1027 a, B/P1026 c). Two other specimens, however,

have an ashlar decoration on the body (B/P1018 b) or in the upper part (B/P1026 a).

Regarding the typology, (Figure 14) for these artefacts, two parameters have been taken into consideration: the body and the arms. The body can be as follows: *Straight body*, quadrangular section (Type 1); *Cylindrical body*, circular section (Type 2); *Conical body*, elliptical section (Type 3); *Flared body*, circular/elliptical section (Type 4).

The arms can be round shaped (-R), or hooked shaped (-H). In the context of Qlejgħa tal-Bahrija, there are 6

Clay anchors							
Object ID	Inv. no.	Type	Weight [gr]	Ø [cm]	Height [cm]	Thick [cm]	Paint/Dec/Groove
100022	(a)	/	40	/	5 (fr)	/	/
	(b)	/	57	/	7.7 (fr)	/	P
100023	B/P1018 (a)	/	65	/	6.2 (fr)	/	/
	B/P1018 (b)	/	48	/	7.2 (fr)	/	D
100024	B/P1024 (a)	/	39	/	6.7 (fr)	/	G
	B/P1024 (b)	/	40	/	6 (fr)	/	P
100025	B/P1026 (a)	/	53	/	6.3 (fr)	/	D
	B/P1026 (b)	/	61	/	7.5 (fr)	/	P
	B/P1026 (c)	/	46	/	4.5 (fr)	/	G
100026	B/P1033 (a)	/	35	/	4.2 (fr)	/	/
	B/P1033 (b)	/	30	/	5 (fr)	/	P
	B/P1020	/	36	/	(fr)	/	/
	B/P1089	/	47	/	(fr)	/	G
818506	B/59P/5	/	88	/	6.5	/	G
	B/P1024 (a)	/	31	/	(fr)	/	P
	B/P1025	/	41	/	(fr)	/	P
	B/P1024 (b)	/	20	/	(fr)	/	/
B/P806	B/P506	/	74	/	(fr)	/	G
B/P507		/	108	/	(fr)	/	P/G

Table 4. Clay anchors from Qlejgħa tal-Bahrija.

objects of the type 1 (100026a; 1000027b; 100023a-b; 100025c; B/P1025), of which three with round arms (B/59P5; B/P507; 100026a); 5 objects of type 2 (B/59P5; B/P507; 1000027a; 100022b; B/P1024a), one with round arms (10022b); 2 objects of type 3 (100022a; 100025a); 6 objects of type 4 (B/P1020; 100025b; 100026b; B/P1024b; B/P506 and B/P1089 with hooked arms).

Many of the items from Qlejgħa tal-Bahrija find comparisons with other specimens from Borġ in-Nadur (Temple and Settlement) and Tas-Silġ (North). From the Borġ in-Nadur Temple, there are 3 specimens of the Type 1 (Veca 2011, fig. 7.4,3,6,8), 4 of the Type 2 (Veca 2011, fig. 7.4,1,4,5,7) and 1 of the Type 3 (Veca 2011, fig. 7.4, 2). From Borġ in-Nadur Settlement, there are 5 specimens, of which three are of the Type 2 (Tanasi 2015a, p. 81, figs 137-138). From Tas-Silġ, there are 2 specimens of the Type 1 (Cazzella-Recchia 2017, p. 9, fig. 2, 1-2).

6. Terracotta figurines

As noted elsewhere (Veca 2011), one of the most important and famous aspects of prehistoric Malta is the richness of the figurative material in stone, terracotta, and other materials produced during the Late Neolithic period. The Maltese production is part

of a wider Mediterranean and European phenomenon about which much has been written (Evans 1971; Biaggi 1986; Bonanno 1986; Gimbutas 1989; Stoddart *et al.* 1993; Hutton 1997; Malone 1998; Vella Gregory 2005; Vella 2007).

With regards to the Bronze Age, the best-known examples are the terracotta idols from the Tarxien Cemetery. These are terracotta statuettes that, stylistically, represent disc-shaped idols or anthropomorphic figurines (Cilia 2004).

The two specimens from Qlejgħa tal-Bahrija (Figures 15-16) are very different from each other, both in shape and type, and probably in chronology (Table 5). The specimens are published below, through descriptive cards including dimensions, description of the fabric and surfaces, the typology and the interpretation.

B/P1001

H 4, width 3.2, thickness 3.6, neck 2.4 x 2.5 cm.

Thick. 0.6, horizontal hole Ø 0.4/0.5, vertical holes Ø 0.25/0.3 cm

The fabric is hard and the body compact with some cracks, dark grey colour (core); overcooked internal surface (which suggests that the missing support was hollow). External surface with beige slip, abraded in



Figure 14. Clay anchors from Qlejgħa tal-Bahrija.

	B/P1001	B/P1354
Style	Remarkable care for physiognomic details; additions in other material not found	Poor attention to detail, perhaps offset by the addition of details in other material
Technique	Full modelling head, 'body' hollow; low weight	Full modelling; heavy weight

Table 5. Stylistic and technical comparison between the two terracotta heads B/P1001 and B/P1354.



Figure 15. Terracotta figurines. a) B/P1001; b) B/P1354.

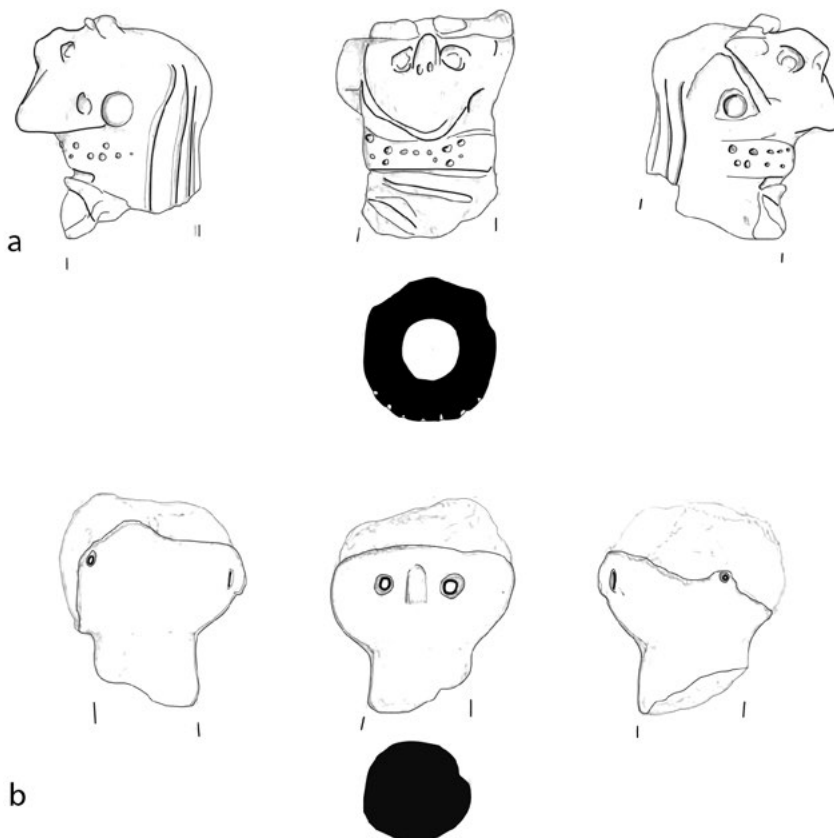


Figure 16. Terracotta figurines. a) B/P1001; b) B/P1354 (scale 1:1).

some places. Traces of paint on the head and the face in general. The paint is glossy brown, also evident on the neck and laterally on the right. Small terracotta head, almost geometric in shape. Triangular face set on an elongated cylindrical neck. The face has two circular impressions to indicate the eyes; the nose is prominent (aquiline) and well defined, with two small holes in the lower part to indicate the nostrils. From the nose, in the upper part, two eyebrows depart and above them, a small horizontal circle to indicate a row of curls on the forehead. The mouth is indicated with a slight depression (but it could be painted?); the chin is pointed and flat. The upper part of the neck is flat, slightly curved at the rear, where eight vertical lines almost parallel to indicate the hair. On the side, at the height of the temporal bone, there is a horizontal hole (made before cooking) passing from side to side. Two other holes, this time with vertical orientation, are located between the upper part of

the frontal bone and the temporal bone: the one on the right side of the face has a gap, probably due to rubbing, which allows you to see the inside of the canal of the hole. On the neck, at the height of the jugular, there is a bulge in the shape of a necklace with a horizontal band (choker?) decorated with two rows of holes (10 the top one, 12 the bottom one). Under this necklace, there is a parallel horizontal incision plus two other oblique ones, which form a triangle with the vertex at the bottom. The head is full and internally hollow up to the height of the neck. This suggests that, in the modelling phase, the head had been moulded first, to which the lower part (from the neck onwards) was then added. The fact that it was hollow leads to the following observations: the head could have a complete body; the head was engaged on a pin; the head was part of an acrolith, with the holes described above useful for grafting other parts of the body in other material; the head was the



Figure 17. Terracotta items. a) 100006a; b) 100006b; c) 2673; d) 100001l.

appendage of a loop. The clay head is characterized by remarkable care for physiognomic details e.g., the nose and eyebrows.

B/P1354

H 4, width 3.3, thickness 3.6; neck 2 x 2; eyeholes Ø 0.25 cm

Fabric hard and very compact body, grey/black colour. Dark grey surface, with white encrustations on the surface; smoothed surface, compared to the rough surface of the cap (this is tending towards black, like the body). Small, almost geometric, terracotta head. Flattened spherical shape of the head, set on a cylindrical neck (both full). On the upper part, a recessed skull cap from the forehead to the occipital, with a less refined and smoother surface compared to the face, useful for anchoring something (cap/headgear/wig). Frontally, low protuberance composed of a vertical segment of clay to indicate the nose. On the sides of this, two circular holes, made after cooking, to set the eyes, which probably had to be in other material. On the sides of the sphere, two other circular holes, always made after cooking, perhaps near the ears, or useful to better fix the headdress/wig. From the observation of this head, the following observations have been drawn: the head could have a complete body; the head was part of an acrolith, with the other parts of the body in another material (higher weight than the first figurine – this is more acrolith than the other!); the head could have been the appendage of a loop (a somewhat peregrine solution, given the high weight).

7. Other terracotta items

Among the artefacts from Qlejgħa tal-Baħrija, there are also some specimens quite similar to loom weights, but which loom weights are not (Figure 17). In particular, the specimens in question are 100001l, 100006a, 100006b and 2673. The specimen 100001l is a roughly modeled fragmentary artefact, pyramidal in shape, weight 67 g, H 6.6 and thickness 3.8 cm: it looks like a loom weight but it has no hole perforation.

Specimen 100006a is a large fragment of a heavy pyramid-shaped larger piece of 177 g. This is one of the few specimens of which we have some indication of the context of discovery (Peet 1910). Peet says it was found in trench B, continued to the south-east of trench A. In this direction, about 7 m away, at a point marked Z on Peet's plan, a 'clay brick' was found, together with three spindle whorls. 100006a has been subjected to petrographic analysis on thin section, XRF and LA-ICP-MS and it turns out that it has granite debris (see chapter 8). Similar to the previous one is the specimen 100006b, always pyramidal in shape but exceptionally heavy (357 g). The last one is 2673, always pyramidal in shape, weighing 280 g. This object, which could seem like a loom weight, has a horizontal through hole, plus a sort of vertical channel passing through the whole body (1.2 cm). For these specimens, further identification is not currently possible.

8. Discussion

At Qlejgħa tal-Baħrija, the evidence of textile manufacture seems not to be limited to a single area of the settlement, as apparently indicated by the spatial distribution of the finds. With regard to spinning, the variety of weights and dimensions of the spindle whorls could indicate levels of diversification in the yarns. It is, however, known that during the Bronze Age the production of animal fibers replaces that of vegetable fibers (Rast Eicher 2005). The predominance of medium weight spindle whorls could be linked to the island character and to a delay/continuation of the spinning of vegetable fibers (for example, flax); the evidence shows, in a much smaller percentage, the appearance of heavy spindle whorls, probably related to the beginning of the spinning of wool fibers.

Concerning the weaving and the presence of weighted-loom at Qlejgħa tal-Baħrija, the weight and thickness of the loom weights can give indications on the type of weaving. The medium and lack of high weight within the studied specimens, can mean that they were suitable for the production of fabrics made with thinner threads with denser wefts (quantity of warp

threads per centimeter), or balanced wefts with the use of thicker threads (Mårtensson *et al.* 2009).

With regards to the clay anchors, this kind of artefact has a wide geographical and chronological diffusion. They are indeed widespread in the Aegean area (Howell 1973; Cazzella *et al.* 2007) and in the Aeolian Islands (Bernabò Brea 1985). In the Maltese archipelago, this class of objects are attested since the end of 3rd Millennium, during the Tarxien Cemetery phase (Cazzella, Recchia 2015), as documented at Xagħra (Malone *et al.* 2009). As we have seen, clay anchors with very similar characteristics to those of Baħrija have been found in several sites including Borġ in-Nadur (Murray 1923, 1925, 1929; Veca 2011) and Tas-Silġ North (Cazzella-Recchia 2017).

At the site of Borġ in-Nadur, clay 'anchors', spindle whorls and loom weights were found in the megalithic area, probably in connection with the reuse of the temple during the Bronze Age. The vast majority of clay 'anchors' and spindle whorls from Tas-Silġ (North) (Cazzella, Recchia 2012) were found concentrated in a confined space of the N/O area (Cazzella-Recchia 2017), connected with the more recent phase of the prehistoric sanctuary.

The clay anchors offer interpretative challenges despite the fact that contemporary examples are known from Mediterranean contexts (Blackolmer 2003, p. 4; Cazzella *et al.* 2007). According to Murray, these were models of anchors placed by seamen as votive offerings marking safe trips or productive fishing (Murray 1925, p. 29; Murray 1961, pp. 59-60). Trump's position is quite different and considers these objects as instruments linked to a textile industry (Trump 1960, p. 295; Trump 1962, pp. 224-255). The concurrent presence at Borġ in-Nadur of several spindle whorls, loom weights and clay anchors, which held light grooves, was interpreted by Trump as 'signs left by thin threads looped over the hooks and sawn back and forth' (Trump 1960, p. 295), and may indeed suggest the presence of a flourishing textile industry during the Bronze Age; perhaps linked to a local market (Tanasi 2010).

Another possible interpretation of the meaning of clay anchors comes from Tas-Silġ. In this context, there are many several indications for a symbolic and cultural function (Cazzella-Recchia 2017): the clay anchors would be ritual donations connected with spinning and weaving activities.

As for the terracotta heads from Baħrija, possible formal comparisons have been identified in other Maltese contexts. The terracotta head B/P1001 finds comparisons (face in general, nose, eyes, hair) with two heads from the Hal Saflieni Hypogeum dated to the Tarxien Cemetery phase (S/P1002) (Zammit *et al.* 1912,

pl. VII, 2; Zammit, Singer 1924, pl. X, 26; Evans 1959, fig. 21, right; Evans 1971, p. 63, pl. 36, 13); with two other heads from Haġar Qim Temples (T/P1003) (Zammit, Singer 1924, pl. XIX, 11; Evans 1971, p. 92, pl. 40, 15-16); with a clay head from Tarxien (T/P1005) (Zammit 1920, fig. 20b; 1930, pl. XXVI, 6; Zammit, Singer 1924, pl. XVIII, 57; Evans 1959, fig. 21, left; Evans 1971, p. 143, pl. 48, 14). This clay figurine also has formal affinities with clay figurines from abroad. In particular, the rendering of the volumes, the triangular shape of the head, the hair, the chin and the nose find comparisons with a terracotta statuette from Ialysos, dated to the Early Geometric period (D'Acunto 2008-2009, p. 38, fig. 2); precise comparisons for the hair and more generic ones for the face are had with the so-called 'sphinx' from Hagħia Triada (Crete), dated to the Sub-Minoan period (D'Agata 1999, n. C2.16, pp. 71 and 82, Tav. 44, 53).

The terracotta head B/P1354 finds comparisons (face shape, hollows for eyes, nose, ears and headdress junction) with two statuettes from Tarxien, in particular with the specimen TC/P1001 (Zammit 1916, pl. XIX, fig. 1, 1930, pl. XV, 1; Murray 1934, pl. X, top; Evans 1971, p. 161, pl. 55, 10); the comparison with the famous statuette with the semi-circular headdress TC/P1000 (Zammit 1916, pl. XIX; 1930, pl. XV, figs 1-2; Murray 1934, pl. X, bottom; Evans 1971, p. 160, pl. 56, 1-2) is more generic.

9. Conclusions

Despite the almost total absence of data regarding the archaeological context (Peet 1910), it is however possible to make some hypotheses on the basis of the data obtained from the examination of the findings. The presence of about sixty loom weights and as many spindle whorls would suggest an area (hut?) intended for spinning activity, probably of different types of thread for different fabrics, parallel to the weaving activity. In this regard, based on the scatterplot analysis, it is possible to notice the connection between Conical, Truncated-Conical and Pyramidal loom weights, with an average weight between 60/100 g and an average thickness of 3.8/4.8 cm; with these results, the presence of two/three of a vertical loom is conceivable (Broudy 1993) (Figure 18). Furthermore, another important indication is that the specimens painted in Borġ in-Nadur style and the other decorated ones are almost all included. This applies, for example, to the specimens with embossed/engraved and plastic decoration, which have constant parameters (weight, thickness, width of the hole perforation), and could therefore be part of the same loom.

The scarcity of data on the context and the absence of pollen analysis and faunal data, however, does not make it easy to interpret the type of fibres and therefore the yarn used in the settlement of Qlejjha tal-Baħrija.



Figure 18. Reconstruction of a vertical loom from Baħrija. National Museum of Archaeology, Malta.

On the so-called clay anchors, our position sees these artefacts as tools of the world of weaving, interpretable as spools, or more simply loom weights with a different configuration. The first interpretation would be attributable to the characteristic shape (body and two shanks) and above all to the presence of grooves impressed before cooking or traces due to continuous rubbing of cords and threads. Most likely, the other interpretation, that which would see these objects as loom weights, is given by numerous factors. The striking element is the suspension function, indicated by the constant presence of through holes. Then there would be the aspect of the weight, calculated on the few whole and on the fragmentary ones obtained in proportion, from which values similar to loom weights are obtained.

Despite the poverty of findings of the Bronze and Iron Age statuettes – only one example comes from the Borg in-Nadur settlement (Tanasi 2015a, p. 84, Figure 156a-b) – it is possible to affirm that the two specimens from Baħrija are two terracotta heads which were part of much larger pieces of figurines. They represent the indication of activities aimed at modeling statuettes and only further research will explain the extent of the phenomenon during the final stages of the Bronze Age and the Early Iron Age.

References

- Andersson, E. 2011. *The basics of textile tools and textile technology – from fibre to fabric. Tools, textiles and contexts. Investigating Textile Production in the Aegean and Eastern Mediterranean Bronze Age.* Ancient textiles series 21. Oxford.
- Andersson Strand, E., Mårtensson, L., Nosch, M.L. 2009. Shape of things. Understanding a Loom Weight. *Oxford Journal of Archaeology* Vol. 28, No. 4. Oxford.
- Antoniadou, S., Pace, A. (eds) 2007. *Mediterranean Crossroads, Bibliotheca Orientalis*, 66(5-6), Athens.
- Barber, E. J. W. 1992. *Prehistoric Textiles. The development of cloth in the Neolithic and Bronze Age*, New Jersey, Princeton University Press.
- Barrowclough, D., Malone, C. (eds) 2007. *Cult in Context: Reconsidering Ritual in Archaeology*, Oxbow Books, Oxford.
- Bazzanella, M., Mayr, A. 1999. *Tessuti e intrecci dall'insediamento di Lucone di Polpenazze (Polpenazze del Garda - Brescia)*, *Annali del Museo Civico Archeologico della Valle Sabbia* (ed. 17).
- Bernabò Brea, L. 1985. *Gli Eoli e l'inizio dell'età del Bronzo nelle isole Eolie e nell'Italia meridionale: archeologia e leggende*, in *Annali Dipartimento di studi del mondo classico e del Mediterraneo antico – Istituto universitario orientale*, 7, 2, Napoli.
- Bianchi, P. 2004. *Manufatti per filatura e tessitura*, in Bernabò Brea, M., Cremaschi, M., (eds) di, *Il Villaggio Piccolo della Terramara Santa Rosa a Poviglio. Scavi 1987/1992, Origines, Studi e materiali pubblicati a cura dell'Istituto Italiano di Preistoria e Protostoria*, Firenze, pp. 609-651.
- Biaggi, C. 1986. The significance of the nudity, obesity and sexuality of the Maltese goddess figures, in Bonanno 1986, pp. 131-140.
- Bichler, P., Grömer, K., Hofmann-de Keijzer, R., Kern, A., Reschreiter, H. (eds) 2005. *Hallstatt Textiles. Technical Analysis, Scientific Investigation and Experiment on Iron Age Textiles*, BAR I.S. 1351. Oxford.
- Blackolmer, F. 2003. Interrelations between Prehistoric Malta and the Eastern Mediterranean: a View from the Aegean, in L. Eneix (ed.) *Exploring the Maltese Prehistoric Temple Culture (EMPTC)*, Sarasota: OTS, pp. 1-7.
- Bonanno, A. (ed.) 1986. *Archaeology and Fertility Cult in the Ancient Mediterranean*, B.R. Grüner Publishing, Amsterdam.
- Broudy, E. 1993. *The book of looms: A History of the Handloom from Ancient Times to the Present*, UPNE, University Press of England.
- Carpenter, L. B., Feinman, G. M., Nicholas, L. M. 2012. Spindle whorls from El Palmillo: economic implications, *Latin American Antiquity* 23(4), pp. 381-400.

- Cazzella, A., Pace, A., Recchia, G. 2007. *Cultural contacts and mobility between the south central Mediterranean and the Aegean during the second half of the 3rd millennium BC*, in Antoniadou, Pace, pp. 243-260.
- Cazzella, A., Recchia, G. 2012. Tas-Silġ: the Late Neolithic megalithic sanctuary and its re-use during the Bronze Age and the Early Iron Age, in *Scienze dell'Antichità* 18, pp. 15-38.
- Cazzella, A., Recchia, G. 2015. *The Early Bronze Age in the Maltese Islands*, in Tanasi, Vella, pp. 139-159.
- Cazzella, A., Recchia, G. 2017. Donativi nel Santuario di Tas-Silġ a Malta durante il Bronzo Tardo – Prima età del Ferro?, in *Scienze dell'Antichità*, 23.3, pp. 9-17.
- Cilia, D. 2004. *Malta before history. The world's oldest free-standing stone architecture*, Miranda Publishers, Malta.
- Crossland, R. A., Birchall, A. (eds) 1973. *Bronze Age Migrations in the Aegean: archaeological and linguistic problems in Greek prehistory*, London: Duckworth.
- D'Acunto, M. 2008-2009. Una statuetta fittile del Geometrico Antico da Ialysos, in *Annali di Archeologia e Storia Antica*, n. 15-16, Napoli, pp. 35-48.
- D'Agata, A. L. 1999. *Haghia Triada II. Statuine minoiche e post-minoiche dai vecchi scavi di Haghia Triada (Creta)*, Padova.
- Evans, J. D. 1959. *Malta, Ancient Peoples and Places Series*, XI, London.
- Evans, J. D. 1971. *The Prehistoric Antiquities of the Maltese Islands: a survey*, University of London, The Athlone Press.
- Forbes, R. J. 1956. *Studies in Ancient Technology*, Vol. IV. E. J. Brill, Leiden, Netherlands.
- Fransen, L., Norgaard, A., Ostergard, E. 2011. *Medieval Garment Reconstructed: Norse Clothing Patterns*, Aarhus University Press.
- Gimbutas, M. 1989. *The Language of the Goddess: Unearthing the Hidden Symbols of Western Civilisation*, London, Thames and Hudson.
- Gleba, M., Mannering, U. 2012. Introduction: Textile Preservation, Analysis and Technology. *Textiles and Textile Production in Europe from Prehistory to AD 400*. Ancient Textiles Series vol. 11. Oxford.
- Goodison, L., Morris, C. (eds) 1998. *Ancient Goddess: The Myths and the Evidence*, British Museum Press, London.
- Howell, R. J. 1973. *The origins of the Middle Helladic culture*, in Crossland, Birchall, pp. 73-106.
- Hutton, R. 1997. The Neolithic great goddess: a study in modern tradition, in *Antiquity* 71, pp. 91-99.
- Kossowska-Janik, D. M. 2016. Cotton and Wool: Textile Economy in the Serakhs Oasis during the Late Sasanian Period, the Case of Spindle Whorls from Gurukly Depe (Turkmenistan), in *Ethnobiology Letters* 7(1), p. 107-116.
- Malone, C. 1998. *God or Goddess: the temple art of ancient Malta*, in Goodison, Morris, pp. 148-163.
- Malone, C., Stoddart, S., Bonanno, A., Trump, D. H., Gouder, T., Pace, A. 2009. *Mortuary Customs in Prehistoric Malta*, Cambridge.
- Mårtensson, L., Nosch, M. L., Andersson Strand, E. 2009. *Shape of Things: Understanding a Loom Weight*. *Oxford Journal of Archaeology*, 28(4), pp. 373-398.
- Murray, M. A. 1923. *Excavations in Malta: Part I*. Bernard Quaritch, London.
- Murray, M. A. 1925. *Excavations in Malta: Part II*. Bernard Quaritch, London.
- Murray, M. A. 1929. *Excavations in Malta: Part III*. Bernard Quaritch, London.
- Murray, M. A. 1934. *Corpus of the Bronze Age Pottery of Malta, with Chapter by Horace Beck and Charles Zammit*, London.
- Murray, M. A. 1961. Pottery Anchors, in *Antiquity* 35, pp. 59-60.
- Nicoletti, F. (ed.) 2015. *Catania Antica. Nuove prospettive di ricerca*, Palermo.
- Peet, T. E. 1910. Contributions to the study of the Prehistoric period in Malta, in *Papers of the British School at Rome*, 5 (1910), pp. 141-163.
- Rast-Eicher, A. 2005. Bast Before the Wool: the first textiles, in P. Bichler, K. Grömer, R. Hofmann-de Keijzer, A. Kern, H. Reschreiter (eds), *Hallstatt Textiles. Technical Analysis Scientific Investigation and Experiment on Iron Age Textiles*, Oxford: BAR Publishing, pp. 117-131.
- Smith, M. E., Hirth, K. G. 1988. Development of Prehispanic Cotton-Spinning Technology in Western Morelos, Mexico. *Journal of Field Archaeology* 15, pp. 349-358.
- Stoddart, S., Bonanno, A., Gouder, T., Malone, C., Trump, D. 1993. Cult in an Island Society: Prehistoric Malta in the Tarxien Period, in *Cambridge Archaeological Journal* 3:1, pp. 3-19.
- Tanasi, D. 2010. Bridging the gap. New data on the relationship between Sicily, the Maltese Archipelago and the Aegean in the Middle Bronze Age, in *Mare Internum* 2, pp. 111-119.
- Tanasi, D. 2015. *The pottery from the excavation campaigns of David Trump (1959) at the settlement of Borġ in-Nadur*, in Tanasi, Vella, pp. 35-97.
- Tanasi, D., Vella, N. (eds) 2011. *Site, artefacts and landscape - Prehistoric Borġ in-Nadur, Malta*, Polimetrika International Scientific Publisher, Monza/Italy.
- Tanasi, D., Vella, N. C. (eds) 2015. *The Late Prehistory of Malta: Essays on Borġ in-Nadur and other Sites*, Archaeopress Archaeology, Oxford.
- Trump, D. H. 1960. Pottery 'Anchors', in *Antiquity* 34, p. 295.
- Trump, D. H. 1961. The Later Prehistory of Malta, in *Proceedings of Prehistoric Society* 27, pp. 253-62.
- Trump, D. H. 1962. 'Anchors' and 'Frying Pans', in *Antiquity* 36, pp. 224-225.
- Vella Gregory, I. 2005. *The Human Form in Neolithic Malta*. Midsea Books, Malta.
- Vella, N. C. 2007. *From Cabiri to Goddess: cult, ritual and context in the formative years of Maltese archaeology*, in Barrowclough, Malone 2007, pp. 61-71.

- Veca, C. 2011. *The small finds*, in Tanasi-Vella, pp. 195-222.
- Zammit, T. 1916. The Hal Tarxien Neolithic Temple, Malta, *Archaeologia*, LXVII, p. 127.
- Zammit, T. 1920. Third report on the Hal Tarxien excavations, *Archaeologia*, LXX.
- Zammit, T. 1931. A Neolithic Statuette from Tarxien, in *Book of the museum of Malta*, I, 2 (October 30), p. 53.
- Zammit, T., Singer, C. 1924. Neolithic representation of the Human Form from the island of Malt and Gozo, *F. R. anthrop. Inst.*, LIV, p. 67.
- Zammit, T., Peet, T. E., Bradley, R. N. 1912. *The small objects and the human skulls found the the Hal-Saflieni prehistoric Hypogeum*, Second Report, Malta.

Chapter 5.

Stone, metal and bone artefacts from Qlejgha tal-Bahrija

Carlo Veca, Paolo Trapani, Davide Tanasi

1. Introduction

The non-ceramic materials from Peet's and Evans' excavations at Qlejgha tal-Bahrija are surprisingly low in number. While the stone items account to several examples, the metal artefacts are only represented by two objects. A rather unusual fact when one considers that the site represents the most mature part of the Maltese Bronze Age. Furthermore, the retrieval of only two bone items, recorded after the excavation and not available anymore, testifies to a limited usage of those raw materials at the site for the craft of tools and implements.

2. Stone items

The stone items from the site of Qlejgha tal-Bahrija can be distinguished into three groups, those available at the National Museum of Archaeology when the current study was conducted, those observed and described by Evans when he carried out his preliminary cataloguing of the artefacts from 1909 excavation, and those just mentioned in Peet's and Trump's reports.

In the published excavation report, Peet describes the presence of 15 stone objects, including stone slabs, grinding pebbles, flint and chert, plus a large number of unidentified pebbles (Peet 1910, pp. 153-154), but only three specimens are illustrated (Peet 1910, Pl. XIV, 33, 34, 39). It is noted that Peet recorded all of the specimens treated in this contribution (Peet 1910, pp. 153-154, notes 2, 3, 7). As evidence of further earlier occupation of the site, Trump quotes 'a polished stone axe amulet and an obsidian blade' in the plough soil of the field in association with the scraped surface of

a disturbed deposit, containing a sherd of 'Period II' and green-glazed Arab ware (Trump 1961, p. 258; Evans 1971, p. 105). In addition, in 1914, two circular limestone 'covers' were found (MAR 1913-1914, p. 1).

The first group of materials, is made of seven artefacts (Table 1, Figure 1):

Object ID: 100069 (B/S4)

Object: Axe pendant

Provenance: 1909 excavation

Dimensions: Width 3.3, length 4.6, thick. 1.1 cm

Material: Hard greenish black stone

Color: Black

Description: Miniature axe pendant of black steatite stone. Trapezoidal in shape and flat section, slightly convex. Tight at the top, with an incomplete drilled circular hole; lower part with double-sided cut with flattened profile. Polished surface.

Conditions: Chipping on the top.

Object ID: 100076 (B/S)

Object: Pestle

Provenance: 1909 excavation

Dimensions: Width 8.3, length 9.4, thick. 5.5 cm

Material: Hard limestone

Color: Dark grey

Description: Rounded top and lower part, convex sections. Lower part with detachments for the handgrip.

Conditions: Polished surface

Object ID: 100077 (B/S17)

Object: Grinder/rubber

Provenance: 1909 excavation

Dimensions: Width 10, length 10.4, thick. 5 cm

Object	Inv. no.	Material	Provenance
1 axe pendant	100069 (B/S4)	hard green-black stone	exc. 1909
1 pestle	100076 (B/S)	hard limestone	exc. 1909
1 grinder/rubber	100077 (B/S17)	hard limestone	exc. 1909
1 grinder/rubber	100078 (B/S18)	hard limestone	exc. 1909
1 grinder	100079 (B/S17)	hard limestone	exc. 1909
1 pestle	100080 (B/S25)	coralline limestone	exc. 1909
1 pestle	100081 (B/S17)	hard limestone	exc. 1909

Table 1. Lithic materials from Peet's excavation studied at the National Museum of Archaeology.

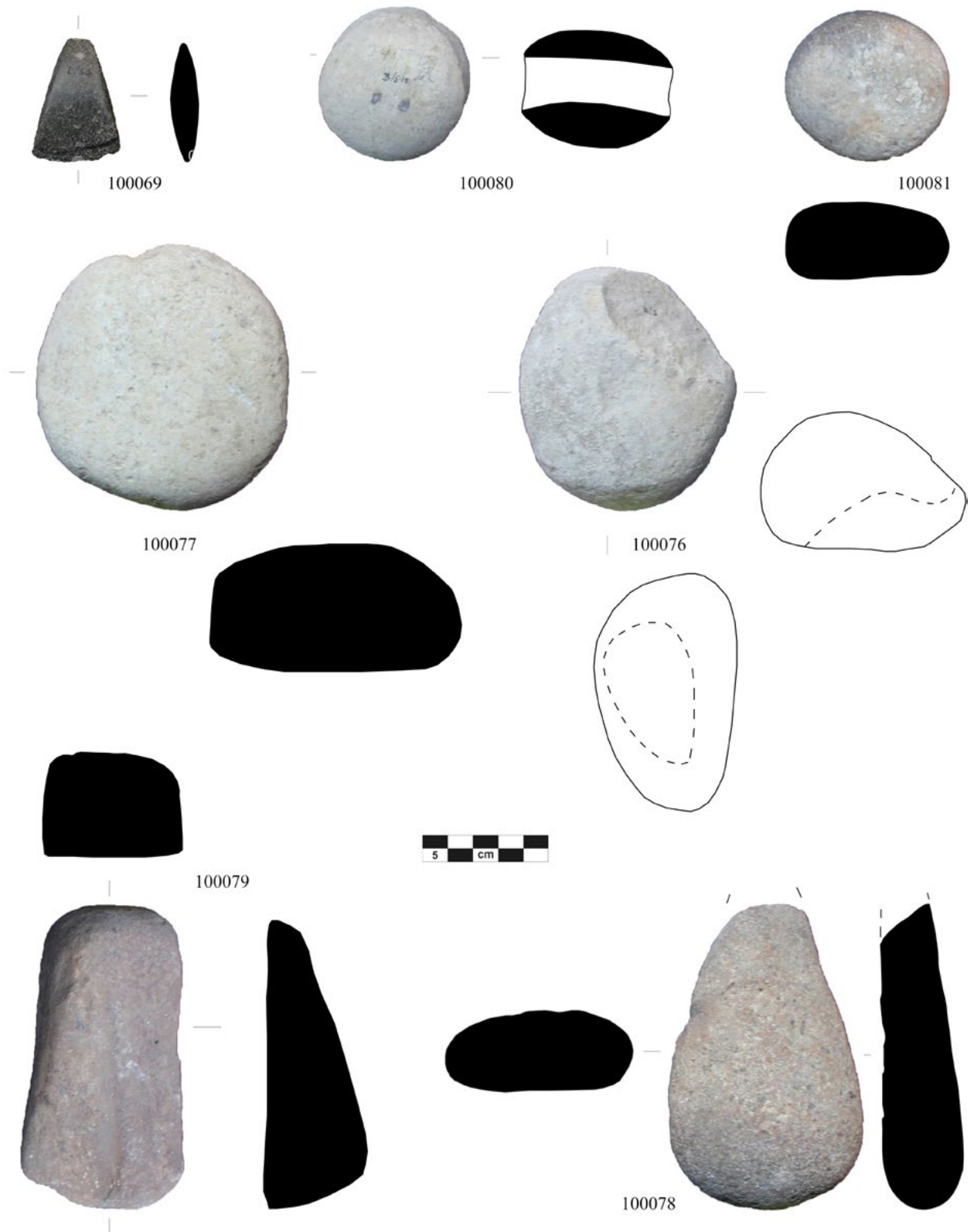


Figure 1. Axe pendant and stone tools from Qlejgha tal-Bahrija.

Material: Hard limestone

Color: Dark grey

Description: Circular to elliptical shape, with hammered sides, irregular flat to convex section. Convex backside (for the handgrip), flat front side, polished by the use.

Conditions: Hammering marks on the backside.

Object ID: 100078 (B/S18)

Object: Grinder/rubber

Provenance: 1909 excavation

Dimensions: Width 7.9, length 11.7, thick. 3 cm

Material: Hard limestone

Color: Dark grey

Description: Triangular-shaped object, flat section, narrow front side compared to the backside, polished by the use.

Conditions: Chipping in the backside. Partial smoothing.

Object ID: 100079 (B/S17)

Object: Grinder

Provenance: 1909 excavation

Dimensions: Width 6.4, length 11.6, thick. 4 cm

Material: Hard limestone

Color: Dark grey

Description: Cylindrical shape, signs of battering on the edges, irregular convex to flat section. Sloped and convex top side (for the handgrip), flat and smoothed low side.

Conditions: Battering signs on the backside.

Object ID: 100080 (B/S25)

Object: Pestle

Provenance: 1909 excavation

Dimensions: Width 5.8, length 5.6, thick. 4.6 cm

Material: Coralline limestone

Color: Dark grey

Description: Round pebble of oval section of coralline limestone with a groove cut round the hedge for the handgrip.

Conditions: Good

Reference: Peet 1910, p. 154, pl. XIV, fig. 33

Object ID: 100081 (B/S17)

Object: Pestle

Provenance: 1909 excavation

Dimensions: Width 6.5, length 5.8, thick. 3.2 cm

Material: Hard limestone

Color: Dark grey

Description: Circular shape, slightly flattened, with convex section. Processing marks on the backside to facilitate the handgrip.

Conditions: Good

The second group of lithic implements is that reviewed by Evans in the 1960s during his study of the materials from Qlejgħa tal-Baħrija at the National Museum of Archaeology of Valletta (Table 2). These materials, mostly coming from Peet's excavation with the exception of a piece marked as 'Baħrija 1916,' were not available when the present study started at the Museum. However it is noteworthy to transcribe here the brief description given by Evans for each piece:

Cat. No.: B/S3

Object: Hone

Provenance: 'Baħrija, 1916'

Dimensions: Length 6, section 1.4 x 1.2 cm

Material: Stone

Color: Grey

Description: 'Hone of polished grey stone, rectangular section tapering to a point to the either end'.

Cat. No.: B/S5

Object: Flintlock flint

Provenance: 1909 excavation

Dimensions: Width 2.6, length 3.4 cm

Material: Flint

Color: Pale brown

Description: 'Rectangular section of wide blade of pale brown flint, trimmed square at either and lightly retouched along one side'.

Cat. No.: B/S6

Object: 'Nuclei' (cores)

Provenance: 1909 excavation

Object	Inv. no.	Material	Provenance	References
1 hone	B/S3	stone	'Baħrija 1916'	
1 flintlock flint	B/S5	flint	exc. 1909	
flint 'nuclei' (cores)	B/S6	flint	exc. 1909	
1 conical object	B/S8	globigerina limestone	exc. 1909	
1 slab	B/S10	stone	exc. 1909	
1 hone	B/S11	stone	exc. 1909	
1 perforated pebble	B/S12	flinty stone	exc. 1909	Peet 1910, p. 154, pl. XIV, figs. 34, 39
1 perforated pebble	B/S13	globigerina limestone	exc. 1909	Peet 1910, p. 154, pl. XIV, fig. 34
1 perforated pebble	B/S14	pebble	exc. 1909	Peet 1910, p. 154, pl. XIV, fig. 39
drum-shaped object	B/S16	globigerina limestone	exc. 1909	
4 hammer stones	B/S18	stone	exc. 1909	
3 chert flakes	B/S 19	buff-grey chert	exc. 1909	Peet 1910, p. 154

Table 2. Lithic materials studied by Evans in the 60s at the National Museum of Archaeology.

Dimensions: –

Material: Flint

Color: Black, light grey

Description: ‘2 nodules of flint, one black, one light grey’.

Cat. No.: B/S8

Object: Conical object

Provenance: 1909 excavation

Dimensions: Height 4.4, base 3.5 cm

Material: Globigerina limestone

Color: –

Description: ‘Small lump of globigerina limestone trimmed into conical shape’.

Cat. No.: B/S10

Object: Slab

Provenance: 1909 excavation

Dimensions: Surviving 5.3 x 7.6, thickness 1.6 cm

Material: Stone

Colour: Grey

Description: ‘Slab of hard grey stone ground to flat form with a square edge’.

Cat. No.: B/S11

Object: Hone

Provenance: 1909 excavation

Dimensions: Length 6.8 cm

Material: Stone

Colour: Red

Description: ‘Pebble of hard buff to red stone ground by use to flying boat shape’.

Cat. No.: B/S12

Object: Perforated pebble

Provenance: 1909 excavation

Dimensions: Pebble ca. 7, hole 2 cm

Material: Flinty stone

Color: White

Description: ‘Pebble of hard white flinty stone with a narrow cylindrical perforation at the centre’.

Cat. No.: B/S13

Object: Perforated pebble

Provenance: 1909 excavation

Dimensions: Width 15 cm

Material: Globigerina limestone

Color: –

Description: ‘Fragment of large squarish block of globigerina limestone with a large hourglass perforation at the centre’.

Cat. No.: B/S14

Object: Perforated pebble

Provenance: 1909 excavation

Dimensions: Height 8.1, width 7, thickness 4.1 cm

Material: Pebble

Color: –

Description: ‘Triangular pebble with a flat section and a naturally perforated diagonally through the top corner. The base shows signs of battering’.

Cat. No.: B/S16

Object: Drum-shaped object

Provenance: 1909 excavation

Dimensions: Width 12, height 17.5 cm

Material: Globigerina limestone

Color: –

Description: ‘Squat cylinder of globigerina limestone’.

Cat. No.: B/S18

Object: Hammer stones

Provenance: 1909 excavation

Dimensions: –

Material: Stone

Color: –

Description: ‘4 stones of various hard sorts of rock showing an edge battered through use’.

Cat. No.: B/S19

Object: Chert flakes

Provenance: 1909 excavation

Dimensions: –

Material: Chert

Color: –

Description: ‘2 pieces of chert, not worked; another flake of buff-grey chert’.

The third group of materials is that represented by those mentioned and discussed by Peet and Trump in their reports, which were not studied by Evans and were not available at the National Museum of Archaeology when the present study was undertaken. All the extant information about them consist of their meagre descriptions offered in the publications as summarized below (Table 3). Only two artefacts were illustrated in Peet’s report (1910, pl. XIV, 34, 39) (Figure 2).

With regards to the chronological and typological framework of the first group of materials, the axe pendant is a common type and found throughout Mediterranean contexts since the Neolithic period, including Malta, as shown by the pendants retrieved from the Hal Saflieni Hypogeum, Tarxien Temples and Xagħra Circle (Skeates 1995). At the Hypogeum, a very large group of various axe pendants are recorded (Zammit *et al.* 1912, pl. XI; Evans 1959, pl. 82; Evans 1971, p. 64, pl. 37.12; pl. 38.2 top left). Another cache of axe pendants was found during the excavation of the Tarxien Temples, in connection with the reuse of the site during the Tarxien Cemetery phase (Zammit 1916, pl. XVI.3; Zammit 1920, Figure 17; Evans 1971, p. 146, pl. 51.12; p. 162, pl. 58). In the Żebbuġ tomb of Xagħra, just under thirty specimens are recorded (Brown, Leighton, Dixon 1995, pp. 303-345; Dixon *et al.* 2009, pp. 353-260, Figure 10.30-32). The axe pendant is made in

Object	Material	Description	Provenance	References
1 slab	hard limestone	Elliptical, convex on one face and flat on the other (Ø 29 and 15 cm)	exc. 1909	Peet 1910, p. 153
pebbles	pebble	A large number, small and round	exc. 1909	Peet 1910, p. 154
3 stones	pumice	3 pieces of pumice	exc. 1909	Peet 1910, p. 154
1 flint	black flint	A rough piece of flint not worked	exc. 1909	Peet 1910, p. 154
2 ‘covers’	limestone	two circular ‘covers’ of limestone	exc. 1909	MAR 1913-1914, p. 1
1 blade	obsidian	Obsidian blade	exc. 1959	Trump 1961, p. 258

Table 3. Lithic materials discussed in Peet’s and Trump’s reports.



Figure 2. Stone items illustrated in Peet’s report, a) pl. XIV, 34, b) pl. XIV, 39.

a kind of stone that is not local to Maltese Islands, but most probably imported. For this category of objects, the raw material of which they are made, the shape and the intended use all represent the ritual markers of the groups that used those artefacts (Pétrequin *et al.* 2012). The conditions of the discovery – in a very disturbed context – do not give indications about its use and function. The chronology this artefact would suggest is the Early Bronze Age, and therefore the Tarxien Cemetery phase. Although there are no records of this age in the settlement, the cave of Qlejgħa tal-Baħrija could instead indicate a presence during the Tarxien Cemetery phase and give a justification for the discovery of the axe pendant. The presence of the axe-pendant should be linked to the maintenance of a degree of traditional belief and practice, as it seems to be indicated by the reduction of the use of this kind of object during the Bronze Age compared to previous ages (Skeates 2002, p. 21; Mancusi 2016).

With regards to the other stone tools, it is possible to make some observations on manufacturing technology. The specimens are just polished: this is due to the initial raw material, which could consist of a core of rock or pebble that already naturally had the characteristics of the object to be made. From these observations it is possible to understand some of the different processing phases, which ranged from the selection of the raw material, its finishing and, finally, smoothing (Veca 2019). Other stone tools are known from the temple (Veca 2011, fig. 7.1) and village (Bracchitta 2015, fig. 1) of Borġ in-Nadur and

from Għar Mirdum (Tanasi 2014, fig. 17 a-b). Given the small number of discoveries and studies, we are still far from being able to define a typological treatment of these objects for this period. Although they have often been neglected by previous studies, the stone tools are important to describe some of the daily aspects of the domestic activities of the settlement. The amount of stone items, including those lost (there must have been many more), was certainly connected to the activities practiced in the inhabited area of Qlejgħa tal-Baħrija. From the observation and interpretation of these objects, it is possible to affirm that different activities such as grinding, crushing and food processing were practiced.

Ultimately, with respect to the three pumice stone objects, the numerous pieces of flint cited by Peet (1910, p. 154) and the obsidian blade mentioned by Trump (1961, p. 258), they are very likely imports from Sicily introduced in older stages of Maltese prehistory (Trump 1966; 2002).

3. Metal items

The metal items from Qlejgħa tal-Baħrija are represented by just two objects from Trump’s excavation as nothing of this class was retrieved – to his great surprise – by Peet. The objects in question are a ring and a needle found in the same layer, ‘II B3 / II C’ level’ according to Trump, with a mixture of Borġ in-Nadur and Baħrija pottery (Trump 1961, p. 262, pl. XVI, lower right). Besides those artefacts, Trump refers also to a chip of bronze (Trump 1961, p. 258; Evans 1971, p. 105).

The ring – inv. no. 2700 (Figure 3) – is of band type and is decorated with two oblique friezes of lightly incised lines separated by a continuous line at the centre on its outer surface. The needle – inv. no. 2701 (Figure 3) – with a length of about 10 cm has to be considered as a sewing needle. Portable X-Ray Fluorescence Spectroscopy analyses conducted on the objects have demonstrated that they are made out of bronze, two of the few in the Maltese prehistory that are made of pure copper (Tanasi *et al.* 2019) (Table 4).

Site	Object	Cat.	Inv. No.	USF #	Analyses	Cu	Sn	Pb	Zn	As	Fe	Total
Bahrija	Ring	2700	B 2700	31995	2	92.6	7.0	0.2	0.0	0.1	0.1	100.0
Bahrija	Needle	2701	B 2701	31996	1	88.2	10.7	0.6	0.0	0.1	0.4	100.0

Table 4. Table of the two metal artefacts tested and the elemental data obtained (after Tanasi *et al.* 2019).

Figure 3. Bronze ring 2700 and bronze needle 2701 from Qlejgħa tal-Baħrija.

Another metal finding from Trump's excavation at Qlejgħa tal-Baħrija is the tiny metal shard inserted before firing in the wall fragment 100056 from trench C, Layer 6 (see chapter 3, Figure 86), the function of which is quite unclear (Figure 4). The last reference to a metal object from Qlejgħa tal-Baħrija, is Evans' Museum accession form for item B/S1, which is described as a lump of bronze weighing 130 grams and recovered in 1918 (Figure 5).



Figure 4. Wall fragment with inserted metal shard 100056 from trench C, Layer 6 of Trump's excavation.

Object: LUMP OF BRONZE.	Provenance: Baħrija.	Date: 1918	Cat. No.: B/S1
Description: SHAPELESS lump of copper or bronze.		Measurements: Weight : 130 gms	
		Photo. No.	
		Drawing No.	
Conserved at: Valletta Museum.	Published in:	Survey:	

Figure 5. Evans' Museum accession form describing a lump of Bronze recovered at Baħrija in 1918. (courtesy of the National Museum of Archaeology).

4. Bone items

The evidence for bone items is extremely disappointing, as almost nothing is mentioned in Peet or Trump's report or was found when the current study was conducted at the National Museum of Archaeology.

However, in Evans' Museum accession forms there is data about two interesting artefacts: bone comb B/B1 (Figure 6) from the 1909 excavation and three fossil shark teeth (Figure 7) dated '1908', which is the date in which the materials were collected at Qlejgħa tal-Baħrija and showed to the then Curator of the Valletta Museum Themistocles Zammit (Peet 1909, p. 149).

It is a true disgrace that the bone comb was lost over time, as its typology would have proved very helpful to define its function and chronology. In the Sicilian context of the Ausonian II culture, such as the settlement of the Lipari Castello and the necropolis of Molino della Badia at Grammichele (Figure 8), which are dated to between 1050 and 850 BC, a time frame compatible with the Baħrija period, several examples of ivory combs, at times decorated with incised circlets are recorded. The function of those artefacts is not certain. They could have been used for hair care or be employed in textile activities, for example to divide the threads in the loom (Albanese Procelli, Chilardi 2005).

Three fossil shark teeth, technically on the threshold between stone and bone items, were interestingly used by Margaret Murray for a little experimental archaeology project aimed at replicating the Baħrija pottery motif of the curved hatched line, which was actually successful (Figure 9). The fact that Zammit is mentioned by Murray as part of such experiment, allows us to suggest that the fossil tooth employed could have been one of those gathered at Qlejgħa tal-Baħrija in 1908 (Murray 1934, p. 2, pl. XXXVIII).

Object:	Provenance:	Date:	Cat. No:
BONE COMB	Bahrija	1909	B/E 1.
Description:			Measurements:
Section of flat plate of bone cut into teeth along one edge by means of saw cuts.			
			Photo. No.
			Drawing No.
Conserved at:	Published in:	Survey:	
VALLETTA MUSEUM.			

Figure 6. Evans' Museum accession form for the bone comb B/B1.

<u>Object :</u> SHARKS' TEETH.	<u>Provenance :</u> Bahrija.	<u>Date :</u> 1908	<u>Cat. No. :</u> B/57
<u>Description :</u> 3 fossil shark teeth.		<u>Measurements :</u>	
		Photo. No.	
		Drawing No.	
<u>Conserved at :</u> Valletta Museum.	<u>Published in :</u>	<u>Survey :</u>	

Figure 7. Evans' Museum accession form for the sharks' teeth B/S7.

5. Final remarks

In conclusion, although the stone, metal and bone materials from the excavations at Qlejġha tal-Baħrija cannot really compete in quantity and quality with

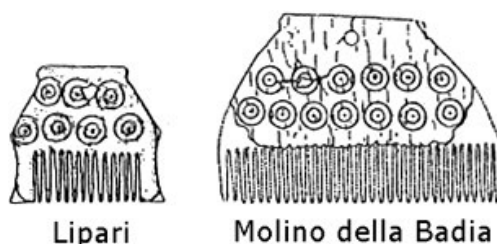


Figure 8. Ausonian II bone combs from Sicily (Albanese Procelli and Chilardi 2005).

the abundance of the ceramics collected, a discussion on their significance has helped to shed light on certain aspects of the Bahrija period, such as stone procurement, metallurgy, pottery technology and possibly foreign trade that are still at the center of the scientific debate.

References

- Albanese Procelli, R. M., Chilardi, D. 2005. Materiali in
avorio da contesti protostorici della Sicilia, in M.
Bettelli, I. Damiani, L. Vagnetti (eds), *L'avorio in Italia
nell'età del bronzo*, Incunabula Graeca CII, Roma: CNR
Istituto di Studi sulle Civiltà dell'Egeo e del Vicino
Oriente, pp. 95-103.
- Bracchitta, D. 2015. The stone artefacts from the
settlement at Borg in-Nadur, Tanasi, D., Vella, N.
C. (eds), *The late prehistory of Malta: essays on Borg
in-Nadur and other sites*, Archaeopress Archaeology
Series, pp. 115-120.
- Brown, C., Leighton, R., Dixon, J. 1995. Stone axes
and stone axe pendants, Malone, C, Stoddart, S.,
Bonanno, A., Gouder, T., Trump, D., *Mortuary ritual of
4th Millennium BC Malta: the Zebbug Period Chambered
Tomb from the Brochtorff Circle at Xagħra (Gozo)*, Pro-
ceedings of the Prehistoric Society, 61, pp. 303-345.
- Dixon, J., Leighton, R., Malone, C., Trump, D. 2009.
Material culture: ground and polished stone, Malone,
C., Stoddart, S., Bonanno, A., Trump, D., Gouder, T.,
Pace, A. (eds), *Mortuary Customs in Prehistoric Malta:
excavation at the Brochtorff Circle at Xagħra, Gozo (1987-
1994)*, Cambridge, pp. 253-260.

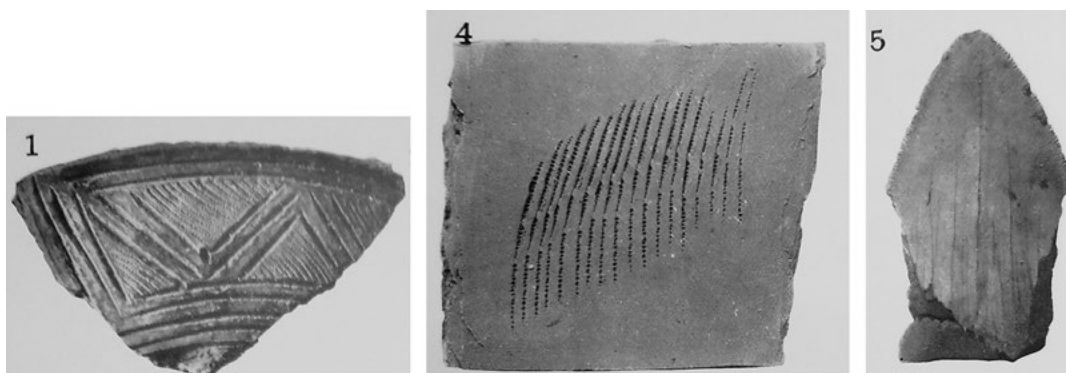


Figure 9. Replication of the decorative motif of the curved hatched line using a fossil shark tooth (Murray 1934).

- Evans, J. D. 1959. *Malta, Ancient Peoples and Places*, Series, London.
- Evans, J. D. 1971. *The Prehistoric Antiquities of the Maltese Islands: a survey*, Athlone Press, London.
- Mancusi, V. G. 2016. Valore d'uso e valore d'ornamento: l'ostentazione dello status attraverso l'uso delle asce pendenti nell'Italia neolitica ed eneolitica, Negroni Catacchio, N. (ed.), *Atti XII incontro di studi Preistoria e Protostoria in Etruria 'Ornarsi per comunicare con gli uomini e con gli Dei. Gli oggetti di ornamento come status symbol, amuleti, richiesta di protezione'*, vol. I, Milano, pp. 111-127.
- MAR – Museum Annual Reports, 1913-1914, Valletta Museum, p. 1.
- Murray, M. 1934. *Corpus of the Bronze-Age Pottery of Malta*, London: Quaritch.
- Peet, T. E. 1910. Contributions to the study of the Prehistoric period in Malta, in *Papers of the British School at Rome*, 5, pp. 141-163.
- Pétrequin, P., Cassen, S., Errera, M., Klassen, L., Sheridan, A., Pétrequin, A. M. 2012. *Grandes haches alpines du Néolithique eurpéen. V et IV millénaires av. J.-C.*, Besançon.
- Skeates, R. 1995. Animate objects: a biography of prehistoric 'axe amulets' in the central Mediterranean region, Malone, C., Stoddart, S., Bonanno, A., Gouder, T., Trump, D., *Mortuary ritual of 4th Millennium BC Malta: the Zebbug Period Chambered Tomb from the Brochtorff Circle at Xagħra (Gozo)*, *Proceeding of the Prehistoric Society*, 61, pp. 279-301.
- Skeates, R. 2002. Axe aesthetics: stone axes and visual culture in prehistoric Malta, *Oxford journal of Archaeology*, 21(1), pp. 13-22.
- Tanasi, D. 2014. Lighting up the dark. The role of Għar Mirdum in maltese prehistory, Guli, D. (ed.), *From cave to dolmen. Ritual and symbolic aspects in the prehistory between Sciacca, Sicily and the central Mediterranean*, Archaeopress, Oxford, pp. 287-308.
- Tanasi, D., Tykot, R. H., Hassam, S., Vianello, A. 2019. The Emergence of Metallurgy in the Maltese Archipelago: an archaeometric perspective, in *STAR: Science & Technology of Archaeological Research*, pp. 1-11.
- Trump, D. H. 1961. The Later Prehistory of Malta, in *PPS* 27, pp. 253-62.
- Trump, D. H. 2002. *Skorba: excavations carried out on behalf of the National Museum of Malta 1961-1963*, Society of Antiquaries, London.
- Trump, D. H. 2011. *Prehistory and Temples*, Malta: Midsea Books.
- Veca, C., The small finds, Tanasi, D., Vella, N. C. (eds), *Site, Artefacts, Landscape: Prehistoric Borġ in-Nadur Malta*, *Praehistorica Mediterranea* 3, Monza, pp. 195-222.
- Veca, C. 2019. Armi, ornamenti e industrie litiche da Cozzo del Pantano e Matrensa, Tanasi D., Veca C. (eds), *Incontri e mobilità nel Mediterraneo preistorico. Le necropoli siciliane di Cozzo del Pantano e Matrensa*, Oxford BAR Publishing, International Series 2950, pp. 149-180.
- Zammit, T. 1916. The Hal Tarxien Neolithic Temple, Malta, *Archaeologia*, LXVII, p. 127.
- Zammit, T. 1918. Third Report on the Hal Tarxien excavations, *Archaeologia*, LXX, p. 179.
- Zammit, T., Peet, T. E., Bradley, R. N. 1912. *The small objects and the human skulls found in the Hal Saflieni prehistoric Hypogeum*, Second Report, Malta.

Chapter 6.

Post-Prehistoric pottery from the 1909 and 1959 excavations at Qlejgha tal-Bahrija

Stephan Hassam

1. Introduction

While gathering the Bahrija phase ceramics of the eponymous site at the National Museum of Archaeology, a small assemblage of pottery was found in a plastic bag among the excavated finds. Preliminary sorting showed that it lacked any clear prehistoric material. Of the artefacts in the assemblage analyzed here, three fragments of a lamp holder were mentioned in a 1912 article by T. E. Peet on Maltese painted wares and were mentioned as having been surface finds in his excavations at Qlejgha tal-Bahrija (Peet 1912, p. 125), linking them to his 1909 excavations on the plateau (Peet 1910). As such, the remaining assemblage is assumed to be surface scatter as well. It is difficult to tell whether the small number of finds is due to collection methods or simply that there was little material to be found. This chapter presents the results of a preliminary study of these materials. It begins with a catalogue of the sherds organized by their initial chronological classifications. Interpretations of the finds and their significance are then presented in chronological order. The pXRF data collected as part of the project (presented in Chapter 7) is used to confirm some hypotheses about the assemblage. Despite the fragmentary evidence and limited typological findings, the site of Qlejgha tal-Bahrija has yielded evidence of a wide-ranging chronology that represents the local and imported wares ranging from the Punic/Hellenistic period to at least the Muslim period, and likely continues into the Late medieval period if not the Early modern period.

2. Catalogue

Only a single wall fragment and rim fragment were given numbers at the excavation site (B/P201 and B/P212). These sherds can be attributed to Trump's 1959 excavations (Trump 1961), which were numbered with the prefix of B/P. The rest of the assemblage were assigned catalogue numbers for the purpose of this analysis, beginning with a letter based on the part of the vessel and sequential numbers following the letter. One group of sherds, identifiable as a lamp holder, was put into its own class. The classes are Bases (B), Handles (H), Rims (R), Walls (W), and Lamp Holders (LH). Each object was measured, described, and photographed.

Only limited information on the fabric of the vessels was gathered due to their poor state of preservation and frequent lack of clean breaks. Thus, few sherds could be classified according to agreed local fabric types (Anastasi 2019, pp. 35-39). The catalogue lists each sherd, interprets the vessel type, and describes the characteristics of the fabric (where discernable) and decoration. Where possible, a tentative chronological period is provided.

2.1 Punic/Hellenistic Pottery (3rd c. – 1st c. BC)

B/P201 – Small thin-walled cup. Two fragments of a rim labelled with B/P201 (?). Rim is rounded and everted, with body extending nearly 90 degrees downward. The fabric is very fine and hard with infrequent calcareous inclusions. Black-slipped. Both fragments are well worn on the exterior except for the relatively fresh break, which occurred after collection. Color of the body: 5YR 8/1 white. Color of the slip: 7.5YR 5/2 blackish grey. H: 1.6 W: 4.8 Th: 0.3 cm; Campana C (Figure 2a).

B4 – Small cup or bowl. Fragment of a ring base with a hard, fine fabric. The fabric includes very frequent very fine calcareous inclusions and the fabric is somewhat gritty. It has a greenish tint that may point to overfiring. Fabric: 5 YR 8/1 white. H: 1.8 W: 5.5 Th: 0.3 cm; Hellenistic (?) (Figure 1d).

2.2 Roman Imperial Pottery (1st c. – 5th c. AD)

B2 – *Mortarium*, small flat base with radiating incised lines. Hard unslipped fabric with small black and white inclusions. Part of the wall preserved. No decoration barring several incisions in the bottom. Fabric: 5YR 7/3 pink. H: 3.1 W: 9.3 Th: 0.8 cm; (Figure 1b).

B3 – Small cup or bowl. The fragment consists of ring base with a fairly fine hard fabric. No discernible inclusions. Evidence of a reddish slip. Clay body: 5YR 7/4 pink. H: 2.6 W: 6 Th: 0.4 cm (Figure 1c).

2.3 Byzantine Pottery (6th c – 9th c. AD)

W6 – Wall of jug (?). Fabric is fine with infrequent visible inclusions. Series of incised lines around the



Figure 1. Bases. a) B1; b) B2; c) B3; d) B4.

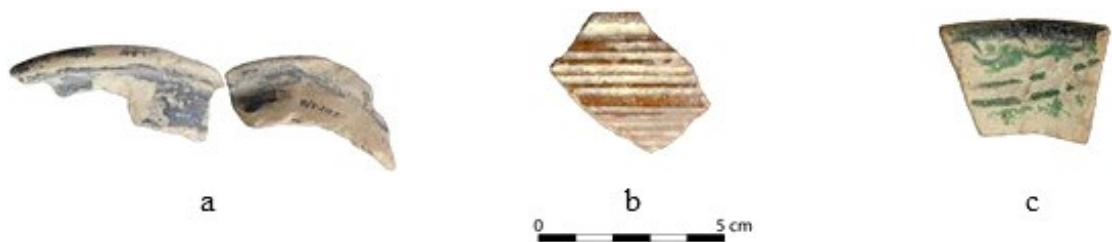


Figure 2. Rims. a) B/P201; b) R1; c) R2.



Figure 3. Handles. a) H1; b) H2; c) H3; d) H4.

body. Shape suggests a jug or storage jar. Fabric: 7.5YR 8/1 white. H: 4.2 W: 5.8 Th: 0.2-0.4 cm. Eastern Mediterranean amphora (Figure 5g).

W7 – Wall of bowl with protruding decoration. Fine fabric with infrequent white inclusions. Protruding molded decoration with indents on the side, similar to a ‘pie crust’ decoration, but breakage shows that wall continued. Fabric: 10YR 7/3 very pale brown. Slip: 5YR 8/1 white. H: 4.3 W: 4.4 Th: 0.5-1.4 cm; Byzantine (?) (Figure 5h).

2.4 Islamic and Medieval Pottery (10th c. – 15th c.)

R1 – Small cup or bowl. Small fragment of slightly everted rounded rim. Fabric is very fine with no apparent inclusions. Decorated with incised band below

rim 2 mm thick with further semi-regularly incised bands about 1 mm thick. Dark brown glaze on exterior and interior. Fabric: 7.5 YR 6/6 reddish yellow. Glaze: 7.5 YR 5/6 strong brown. H: 4.1 W: 5.3 Th: 0.3 Medieval (?) (Figure 2b).

R2 – Small cup or bowl. Small fragment of rounded flattened rim. Fabric is very fine and hard with no apparent inclusions. Decorated with incisions forming bands and possible vegetal motifs. Green glaze on rim and interior. Fabric: 5 YR 8/1 white. Glaze: Green. H: 3.6 W: 4.6 Th: 0.4 cm; Islamic (Figure 2c).

W14 – Fine ware wall. Decorated sherd with two parallel incisions on the interior of the wall with outward radiating incisions at a 45-degree angle. The incisions preserve green glaze. The fabric is very fine with no



Figure 4. Lamp holder fragments. a) LH1; b) LH2; c) LH3.

discernible inclusions and a greyish tan colour. Fabric: 5 YR 8/1 white. Glaze: Green. H: 2.4 W: 2.9 Th: 0.6 cm; Islamic (Figure 5b).

2.5 Lamp Holder (unknown chronology)

LH1 – Rim and wall of lamp holder. Handle or arm protrudes from the body, likely as one of the arms of the lamp holder. No visible inclusions due to dirt around breaks. Sharp everted rim. Decorated below the everted band with a single white painted line around the neck of the vessel. Below, thumb impressions around the body in line with the protrusion. A cross-hatched pattern on the body is barely distinguishable. Fabric: 5YR 7/6 reddish yellow. Slip: 5YR 6/8 reddish yellow. H: 9.1 W: 16.8 Th: 1.1 cm; (Figure 4a).

LH2 – Anthropomorphic molded figure. Hard fabric with slip. No visible inclusions due to dirt around breaks. Head missing, two protruding arms, also missing, that likely held platforms for lamps. Plastic decoration. Fabric: 5YR 7/6 reddish yellow. Slip: 5YR 6/8 reddish yellow. H: 12.5 W: 8.3 Th: 4.6 cm; (Figure 4b).

LH3 – Wall of lamp holder. Hard fabric with slip. No visible inclusions due to dirt around breaks. Fabric: 5YR 7/6 reddish yellow. Slip: 5YR 6/8 reddish yellow. H: 4.6 W: 5.3 Th: 0.7 cm; (Figure 4c).

2.6 Unknown Chronology

B/P212 – Molded decoration. The fabric is fine with few inclusions and has a brown colour. The fabric is softer than other pieces. 7.5 YR 7/3 pink. Punic ? H: 3.3 W: 4.4 Th: 0.9-1.3 cm; (Figure 5a).

B1 – Storage jug (?), small flat base of storage jug or jar with evidence of wheel turning with cord marks. Hard unslipped fabric with small black inclusions.

Undecorated common ware. Body of clay 7.5YR 7/2 pinkish grey. H: 3.8 W: 4.1 Th: 0.6 cm; (Figure 1a).

H1 – Vertical loop handle of amphora (?). Hard very fine fabric with infrequent white inclusions. Fabric: 5 YR 8/2 pinkish white. Slip colour: 7.5 YR 7/1 light grey. H: 8.4 W: 5.3 Th: 1.4-1.9 cm; (Figure 3a).

H2 – Vertical loop handle. Very hard fine fabric with small voids and few visible white inclusions. Fabric: 7.5 YR 6/6 reddish yellow. H: 6.7 W: 2.3 Th: 2.2 cm; (Figure 3b).

H3 – Vertical (?) double banded strap handle. Soft very fine fabric with no discernible inclusions. Handle of a trefoil jug, or small amphora handle. Fabric: 7.5 YR 8/6 reddish yellow. H: 4.3 W: 2.4 Th: 0.8 cm; (Figure 3c).

H4 – Double-banded strap handle. Hard very fine fabric with no discernible inclusions. Fabric: 5 YR 7/4 pink. H: 4.3 W: 2.3 Th: 1.6 cm; (Figure 3d).

W1 – Amphora sherd (?). Undecorated. The fabric is hard and fine. No visible inclusions. The sherd is covered in a layer of greyish white encrustations. Fabric: 7/6 reddish yellow. Encrustations or salt slip (?) 5YR 8/1 white. H: 3.8 W: 4.9 Th: 0.4 cm; (Figure 5b).

W2 – Amphora sherd (?). This fragment has two sets of combed lines running horizontal across the body. Fabric: 5YR 6/4 light reddish brown. H: 3.1 W: 3.6 Th: 0.5 cm; (Figure 5c).

W3 – Tile sherd (?). This sherd has a set of combed wavy lines incised into the body, Fabric: 7.5YR 7/2 pinkish grey. H: 4.0 W: 5.9 Th: 0.9 cm; (Figure 5d).

W4 – Amphora sherd (?) The fabric is relatively fine, with no visible inclusions. The shape of the sherd

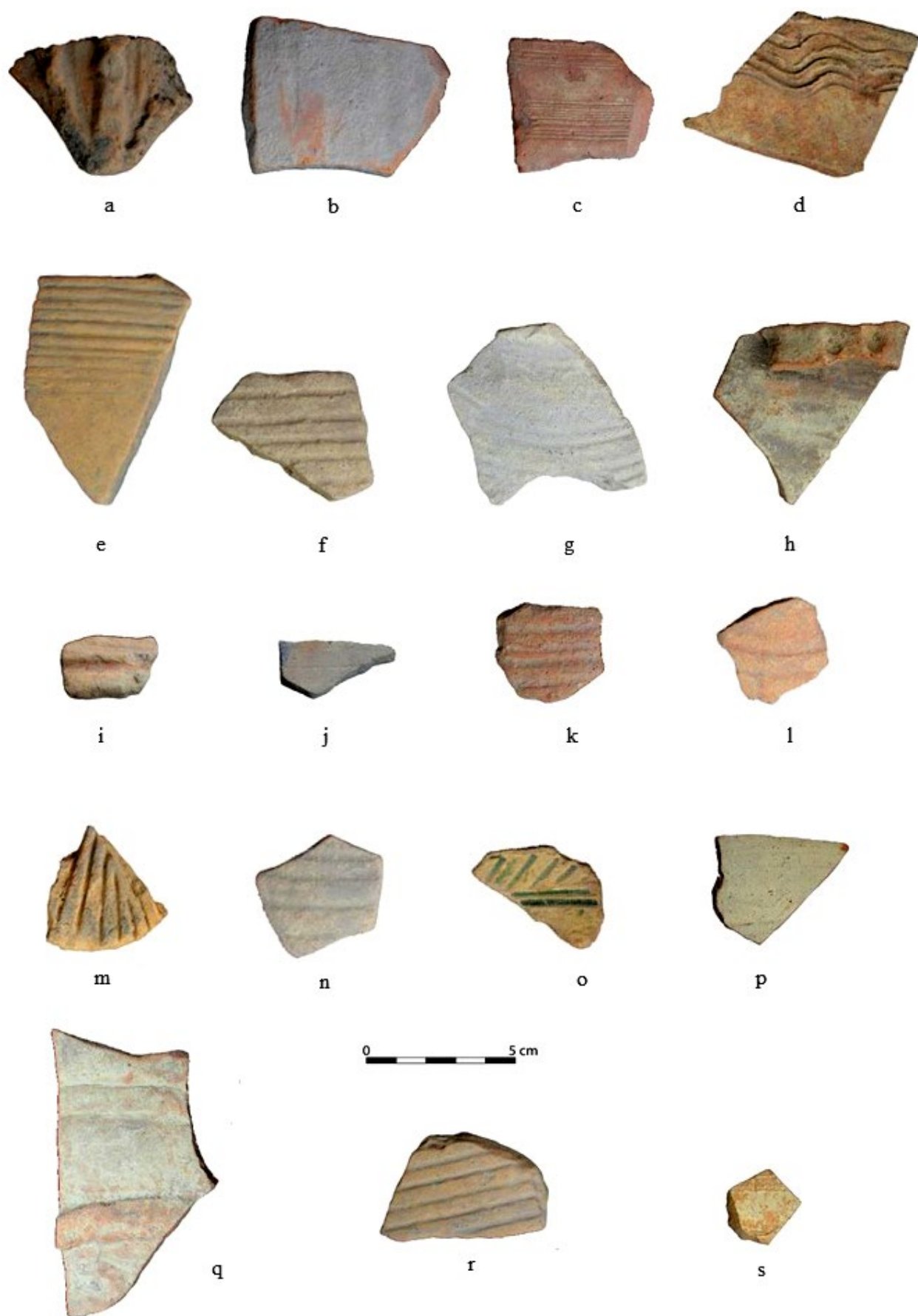


Figure 5. Wall sherds. a) B/P212; b) W1; c) W2; e) W3; e) W4; f) W5; g) W6; h) W7; i) W8; j) W9; k) W10; l) W11; m) W12; n) W13; o) W14; p) W15; q) W16; r) W17; s) W18.

suggests a large vessel, possibly an amphora. Decorated with 9 horizontal lines about 1 mm thick about 2 mm apart. Fabric: 5YR 7/3 pink. H: 5.8 W: 3.8 Th: 0.6 cm; (Figure 5e).

W5 – This sherd has a fine fabric with no visible inclusions. It has four incised lines horizontal to the wall about 1.5 mm thick. Fabric: 10YR 8/1 white. H: 4 W: 3.7 Th: 0.5 cm; (Figure 5f).

W8 – Wall of lamp (?). Fabric: 5YR 7/3 pink. H: 1.4 W: 3.1 Th: 0.5 cm; (Figure 5i).

W9 – Unknown. Traces of differential firing on the sherd. Fabric: 5YR 7/1 light grey to 5YR 7/4 pink. H: 1.3 W: 2.8 Th: 0.4 cm; (Figure 5j).

W10 – Unknown. Fine fabric with horizontal seemingly incised in exterior. Poorly preserved. Fabric: 7.5YR 6/4 light brown. H: 2.4 W: 2.3 Th: 0.5 cm; (Figure 5k).

W11 – Unknown. Fabric is fine with very frequent tiny white inclusions. Fabric: 7.5YR 8/2 pinkish white. H: 2.7 W: 2.8 Th: 0.1-0.4 cm; (Figure 5l).

W12 – Unknown. This sherd has similar radial decorations to the *mortarium* base, but due to its break lines, it is not possible to determine if it is part of a base. Fabric: 7.5YR 8/2 pinkish white. H: 3 W: 2.9 Th: 0.6 cm; (Figure 5m).

W13 – Unknown. Seemingly fine fabric with shallow horizontal indentations around the body of the sherd. Fabric: 7.5YR 7/1 light grey. H: 2.9 W: 3 Th: 0.5 cm; (Figure 5n).

W15 – Fine ware (bowl?). Very fine clay with no visible inclusions. White slip with very fine incisions or possibly marks from wheel. Evidence of slight carination towards bottom of the sherd. Fabric: 5YR 7/6 reddish yellow. Slip: 5YR 8/1 white. H: 4 W: 3.1 Th: 0.7 cm; (Figure 5p).

W16 – Exterior Fabric: 5YR 8/1 white. Interior Fabric: 7.5YR 8/2 pinkish white. H: 6.9 W: 3.7 Th: 0.9 cm; (Figure 5q).

W17 – Wall of amphora (?). Fine fabric with no visible inclusions. Fabric 5YR 7/3. H: 2.4 W: 4.3 Th: 1.2 cm; (Figure 5r).

W18 – Fine ware sherd (?). Fine fabric with no visible inclusions. Has a series of small incised lines, less than 1 mm thick as decoration, but too small to determine motif. Fabric: 7.5YR 7/4 pink. Slip: 5YR 8/1 white. H: 1.6 W: 1.6 Th: 1 cm; (Figure 5s).

2. Discussion of the Ceramics

Unfortunately, due to the fragmentary nature of the sherds and the lack of detailed information on the fabric, only a few sherds can be discussed here with any accuracy. The lack of contextual information on the assemblage of presumed surface finds furthers the problem of the interpretation of the site's history. Compounding these issues are a number of post-depositional processes specific to Malta that further complicate possible interpretations. Both the tradition of collecting ancient ceramics from the surface of fields to be processed with lime to waterproof roofs may have greatly changed the frequency of surface finds, and the movement of soils in Malta for farming purposes since the 1930s brings into question whether the artifacts from Trump's excavations are in their original deposit (Anastasi 2011, pp. 165-66). The sparsity of finds and their poor state of preservation, coupled with the issues raised above, should present a strong enough *caveat lector* about possible interpretations of the assemblage. However, the fact that Peet's excavation was conducted before the 1930s allows for the possibility that the surface finds were found *in situ*. Nevertheless, an attempt is made here to discuss some of the sherds that have comparanda or point to a certain class of materials in chronological order. Fortunately, the pXRF analyses carried out on the assemblage (see chapter 7) can confirm a few hypotheses. As will be noted below and confirmed by archaeometry, the majority of the assemblage is most likely made from local clays.

2.1 Hellenistic Pottery

Hellenistic pottery is relatively sparse in Malta considering its proximity to Sicily thanks to a strong tradition of preferring locally made wares (Anastasi 2018, Sagona 2002), though not uncommon. **B/P201** (Figure 2a) is likely a sherd of a small Campana C cup. This class of late Hellenistic pottery is characterized by a grey fabric and black slip and was produced in Sicily between the early 2nd and late 1st centuries BC, especially in and around the city of Syracuse (Morel 1981). This has been confirmed through pXRF analysis (see chapter 7, p. 117), as the two sherds (samples 100074c and 100074c) are outliers in the assemblage. The colour and characteristics of the fabric suggest that **B4** (Figure 1d) may also be a fragment of Campana C wares. The infrequency of ring bases in the Maltese fine ware repertoires suggests that it is more likely an import. Although, if it were indeed misfired, that would suggest that it is indeed a local product. Black-slipped wares are relatively rare in Malta, and have generally been limited to tomb contexts, with notable exceptions, such as the two Campana C plates found in Bulebel (Anastasi 2019, pp. 71-72).



Figure 6. Ras ir-Raheb headland as seen from the Qlejgħa tal-Baħrija plateau.

2.2 Phoenicio-Punic Pottery

It is perhaps telling that there is not a single sherd that suggests an early Phoenician or (pre-Roman) Punic ware. These are characterized by a noticeably pale red or orange clay with frequent voids and limestone inclusions known as ‘Crisp-ware’ (Sagona 2002, pp. 80-81) or Local Fabric 1 (Anastasi 2019, p. 35). Residual Phoenician and Punic wares were found in other prehistoric sites such as Borġ in-Nadur (Anastasi 2011).

2.3 Roman Imperial Pottery

B2 (Figure 1b) is a *mortarium* of a local Maltese form with a chronology ranging between the 1st – 3rd centuries AD. A stratified example was found in Bulebel and is likely to be of Local Fabric 3 based on its external similarities to this type, placing it in the 1st c. AD (Anastasi 2019, p. 136). Due to the breaklines on **W14** (Figure 5m), it is not possible to determine that it is a base, but the characteristics of its fabric and radiating-line decoration could suggest that it is another base of the *mortarium* like **B2**. The fine fabric and reddish colour and burnish of the slip suggests that the sherd **B3** (Figure 1c) belongs to the Sagona’s Romano-Punic period and the wares associated it. However, ring bases are rare in this repertoire, and therefore it is likely that **B3** is the base of Sagona’s Bowl Form VI: 4b. This form is only known from unprovenanced material, but Sagona suggests a general date to the second half of the 1st c. AD (Sagona 2002, p. 188). Another tentative attribution can be given to the amphora handle **H2** (Figure 3b) based on its fabric, form, and size, which could be read as the handle of a Sicilian MRA 1a type, dated to the 2nd-3rd centuries AD (Anastasi 2019, pp. 52-53).

The presence of sherds of Roman date is not altogether surprising. While there are no known Roman sites on the plateau itself, the Ras ir-Raheb headland, where the remains of a Classical structure can still be found, is visible from the plateau (Figure 6). The excavations carried out there found a wide range of Roman material, including a coin of Constantius II dated to between AD 337-361 (Buhagiar 2007, p. 373). The vicinity of the sites could point to possible exploitation of this area in Roman times.

2.4 Byzantine Pottery

The sherd **W6** (Figure 5g) likely dates to the medieval period, as it is similar to an amphora from Marsaskala Bay, found in association with LRA1, LRA2, and LRA4 as well as other identified and unidentified (likely) eastern amphoras (Bruno and Cutajar 2002). The sherd **W7** (Figure 5h) may also be Byzantine in date due to its pie crust decoration, a popular motif in Byzantine coarse wares (Dark 2012, p. 33), though its appearance below the rim may point to a later date (see section 2.5 below).

2.5 Medieval and Late-Medieval Pottery

The Maltese rural landscape was not densely settled, though numerous small medieval scatters on hilltops have been found (Cutajar 2004, p. 60). Considering the medieval tendency to move settlement areas, temporary or otherwise, towards defensible hills (Cutajar 2004: 62), and the nearby Late Medieval cave systems on the western side of the Qlejgħa tal-Baħrija (Buhagiar 2007, p. 373), it is likely that many of the unidentified sherds are medieval or later medieval coarse wares. To date, there is still a relative paucity of medieval wares known from Malta dating to between

the 6th and 16th centuries AD (Molinari and Cutajar 1999, p. 6). Among these potential medieval sherds are two of securely Islamic date. **R1** (Figure 2b) and **W14** (Figure 5o) have similar decorations and are likely part of the same vessel type given their similarity in thickness and decorative motifs. These two fragments seem to belong to a common class of Islamic period wares known to have been made in Sicily in 12th and 13th centuries that are characterized by simple green-glazed bowls with simple incisions and vegetal motifs on the interior, and no decoration on the exterior (Mangiaricina 2013, pp. 98-99, Figure 6). Based on **R2**'s (Figure 2c) glazed surface, this sherd also seems

to date to the medieval period, but no more refined chronology can be offered here. Ceramics from the later Swabian period (12th – 13th centuries AD) have been reported to have been found in Qlejgħa tal-Baħrija (Cutajar 2004, p. 62), but the source and context of these finds is unknown.

Recently, some excellent studies have been carried out on Maltese Late medieval pottery (Palmer 2014; 2019; Palmer *et al.* 2018). **W7** may be an example of a 'thorn-rimmed jar' (Palmer 2019), which are characterized by a pinched applied band below the exterior rim, as found on the sherd. These materials might point to



Figure 7. Lamp holder *comparanda*. a) Lamp holder from the National Museum of Archaeology, Malta; b) Lamp holder from the National Museum of Archaeology, Malta found in Borg in-Nadur; c) Lamp Holder from Gozo; d) Lamp holder from private collection (after Murray 1929).

the continuity of the site's exploitation into the Late medieval period.

2.6 Enigmatic Lamp Holder

Perhaps the most interesting group of sherds in the assemblage are those belonging to the lamp holder. All three fragments presented here were the first of their kind to be published, initially as simple examples of prehistoric painted pottery from Malta (Peet 1912). Being unique, Peet did not hazard their chronology. A nearly pristine lamp holder from the private collection of Lieutenant D. L. Risdon (Figure 7d) was published by Murray in 1929, and further examples have made their way into Maltese museums (Figure 7). Murray's so-called 'lamp stand' was said to have been found in a tomb by a farmer. In Murray's example, the front of the base of is broken off, but the head is intact, and there are small bowls attached to hold 12 lamps (1929, p. 21, Pl. XXXII). Murray hypothesized a late Bronze Age origin due to the object's surface polish and white hatched painted line decoration and links it to Cretan art. However, a remarkably similar piece (Figure 7c) to Murray's example, in the Archaeological Museum of Gozo, though missing the head of the anthropomorphic figure and lacking any visible slip, has been considered by other scholars to be Islamic (Dalli 2006), though the rationale behind this assertion is unclear. To further complicate its potential chronology, this same example is displayed in the Archaeological Museum of Gozo and is labeled as belonging to the late medieval (14th-15th century) based on its similarity to other lamp holders/lanterns dated to that period, and perhaps due to the similarity this class of materials seems to share with red-painted late medieval/early modern jugs (Dalli 2006, pp. 244; Palmer 2019). If these sherds were indeed Islamic or medieval, it would contribute to the hypothesis that Bahrija was partially settled in this period. While each example, including those from the Archaeological Museum of Archaeology, Malta (Figures 7a, 7b) show different allocations of the cups that presumably hold the lamps, they are remarkably consistent in the plastic treatment of the female figurine.

One can first remark that the white painted lines originally apparent upon their discovery and in the publication of Peet have since faded and are hardly discernible today (Figure 4). The red slip or burnishing also show that the examples from Peet's excavations are closest to those from National Museum of Archaeology in Valletta and Murray's private collector, making the unprovenanced example from the Archaeological Museum of Gozo an outlier. The break on the rim of the lamp holder LH1 is likely a protrusion that would have held a cup for holding a lamp, as can be seen on the complete pieces (Figures 7a-d), as well as the painted lines on the body as apparent in Figure 7b and discernible in Figure 7d). LH2 demonstrates the same

draped plastic treatment of the female figurine. While LH3 is a small fragment and would be hard to place in a reconstruction, LH1 is most likely a part of the protrusion of the principal lamp recess, and based on the position of the broken protrusion for the cup, must have formed the top of the recess.

The lack of detailed contextual data does not permit dating here, but the fact that the three sherds from Peet's excavations were surface finds in an assemblage containing no evident prehistoric material may be telling. In addition, the lamp holders share many characteristics with other forms of Late Medieval / Post-Medieval lamp holders, including a brim around the base, white painted decoration that sometime forms cross-hatching, a globular cavity in which a lamp would be inserted, and saucer trays (Palmer 2019), though the trays in these examples do not resemble those from Late Medieval and Post-Medieval ceramics.

3. Conclusion

This contribution catalogued and offered limited interpretation of the presumed assemblage of scattered sherds yielded from Peet and Trump's excavations based on simple characterization, typological analysis and archaeometric data obtained via pXRF analyses. Considering identifiably Byzantine, Islamic, and medieval sherds, it is likely that the site of Qlejġha tal-Bahrija was considered a defensible hilltop, and partially settled during these periods. The Late Medieval period surely had troglodytic settlement in the caves at the base of Qlejġha tal-Bahrija near the site of Peet's excavations, which likely contributed a good deal of undated material to the assemblage. The poorly contextualized materials, while yielding little novel data on the site itself, can hopefully contribute to the overall characterization of Malta's settlement patterns and economy over the *longue durée*, especially with a close examination of fabric types from the assemblage. The uniquely contextualized fragments of the class of enigmatic lamp holders in Malta provides another basis for further study. Due to the lack of any provenanced materials, an intensive campaign of archaeometric studies is in order to parse the chronology of this class of materials.

References

- Anastasi, Maxine 2011. 'The Post-Prehistoric Pottery.' In *Site, Artefacts, and Landscape: Prehistoric Borġ in-Nadur, Malta*, edited by Davide Tanasi and Nicholas C. Vella, 1st ed., 159-72. Praehistorica Mediterranea 3. Monza, Italy: Polimetrica International Scientific Publisher.
- Anastasi, Maxine. 2018. *Tracing Identity from Insularity: Maltese Industries in the Late Punic and*

- Roman Period, in A. Kouremenos (ed.), *Insularity in the Roman Mediterranean*, Oxford: Oxbow Books, pp. 125-143.
- Anastasi, Maxine 2019. *Pottery from Roman Malta*. Malta Archaeological Review Supplement 1. Oxford: Archaeopress.
- Bruno, Brunella and Cutajar, Nathaniel 2002. 'Archeologia bizantina a Malta: primi risultati e prospettive di indagine.' In *Da Pirgi a Mozia - Studi sull'archeologia del Mediterraneo in memoria di Antonia Ciasca*, edited by M. Amadasi Guzzo, F. Liverani, and P. Matthiae, 109-38. Roma: Vicino Oriente.
- Buhagiar, Keith 2007. 'Baħrija: Its Archaeological Significance.' *Melita Historica* 14 (4), pp. 357-74.
- Cutajar, Nathaniel 2004. 'The Archaeology of Malta's Middle Ages: Documenting Cultural Change between the Tenth and Thirteenth Century.' In *Malta. Roots of a Nation. The Development of Malta from an Island People to an Island Nation*, edited by Kenneth Gambin, pp. 55-64. Malta: Heritage Malta.
- Dalli, Charles 2006. *Malta: The Medieval Millennium*. Malta's Living Heritage. Malta: Midsea Books.
- Mangiaracina, Claudio Filippo 2013. 'La ceramica invetriata nella Sicilia islamica e normanna (X-XII secolo).' *La Luce del Mondo. Maioliche Mediterranee Nelle Terre Dell'Imperatore*, pp. 89-105.
- Molinari, Alessandra and Cutajar, Nathaniel 1999. 'Of Greeks and Arabs and of Feudal Knights' *Malta Archaeological Review*, no. 3, pp. 9-15.
- Morel, Jean-Paul 1981. *Ceramiques Campanienne: Les Formes*. Vol. 1. 2 vols. Bibliotheque Des Ecoles Francaises d'Athenes et de Rome 44. Palais Farnese: Ecole Francaise de Rome.
- Murray, Margaret A. 1929. *Excavations in Malta Part III*. London: B. Quaritch.
- Palmer, Russell 2014. 'Maltese Ceramics and Imperial Foodways: An Exploration of Nineteenth-Century Red Wares.' *European Journal of Archaeology* 17 (4): 678-701.
- Palmer, Russell 2019. 'Post-Medieval Maltese Earthenware and Its Makers: Unearthing a Forgotten Industry.' *International Journal of Historical Archaeology*, 24, pp. 422-455.
- Palmer, Russell, Simona Raneri, Paolo Mazzoleni, Nicholas C. Vella, Germana Barone, and Wim De Clercq 2018. 'Neighbourly Ties: Characterizing Local and Sicilian Pottery in Post-Medieval Malta.' *Journal of Archaeological Science: Reports* 19 (June), pp. 575-87.
- Peet, T. E. 1910. Contributions to the study of the Prehistoric Period in Malta, *Papers of the British School at Rome* 5, pp. 141-163.
- Peet, T. E. 1912. Prehistoric painted pottery in Malta. *Liverpool Annals of Archaeology and Anthropology* 4, pp. 121-125.
- Sagona, Claudia 2002. *The Archaeology of Punic Malta*. Ancient Near Eastern Studies Supplement 9. Leuven: Peeters.
- Trump, D.H. 1961. The Later Prehistory of Malta, *Proceedings of the Prehistoric Society* 27, pp. 253-262.

Chapter 7.

Non-destructive pXRF analysis of Middle Bronze and Iron Age pottery from Malta

Davide Tanasi, Robert H. Tykot, Frederick Pirone,
Nicholas C. Vella

1. Introduction

Trace elemental analysis has played an important role in exploring human movement, trade and interaction in prehistoric societies. Specifically, it has proven useful in determining the provenance of ceramic artefacts by comparing the trace elemental composition between the bulk chemistry of the clay used in pottery productions with the geochemical composition of clay sources (Tykot 2004; 2016). Various instruments used in determining trace elemental compositions of clays such as neutron activation analysis (Mommensen *et al.* 2006), X-ray fluorescence (Barone *et al.* 2015), and hand-held X-ray fluorescence (Pirone 2017) have been employed in studying prehistoric Maltese ceramics.

The use of a portable or hand-held X-ray fluorescence spectrometer (pXRF) is of particular interest because it has become increasingly more popular in ceramic sourcing studies in recent years due to a number of advantages that include the ability to non-destructively analyze ceramic materials on location at museums and the overall affordability in analyzing a large number of artefacts within a relatively short period of time. These advantages are certainly attractive to research archaeologists; however, the heterogeneous nature of ceramic surfaces potentially creates a technical disadvantage in non-destructively analyzing ceramic materials compared to homogenized powder samples. A number of studies have successfully addressed the heterogeneous nature of clay artefacts and have demonstrated methods in non-destructively analyzing only ceramic surfaces (Hunt and Speakman 2015; Speakman *et al.* 2011; Tykot 2016; Tykot *et al.* 2013). Taking into consideration these studies for non-destructively studying ceramic surfaces using a pXRF in the present project, careful attention was given to analyze ceramic surfaces with relatively flat areas and that showed no signs of slip or application of paint or decoration. Additionally, multiple spots on both the inside and outside surfaces of each sherd were analyzed and attention was given in order to avoid analyzing locations where there were visible inclusions.

2. Materials and Methods

The excavations carried out at Qlejgha tal-Baħrija in 1909 (Peet 1910) and 1959 (Trump 1961) produced a large quantity of pottery related to the Late Borġ in-Nadur and Baħrija phases, among which there are certain examples clearly recalling Sicilian and Aegean prototypes (see chapter 3). Alongside the destructive chemical analyses conducted on a limited number of specimens (Tanasi *et al.* in this volume), it was decided to test a larger sample group using a non-destructive technique, which is recently offering more and more reliable results with respect to study of pottery.

For this reason, a total of 274 ceramic samples from the prehistoric site of Qlejgha tal-Baħrija, 270 from Peet's excavation and four from D. H. Trump's 1959 excavation were analyzed using a Bruker Tracer 5i pXRF instrument and compared with results obtained for the trace elemental compositions determined for 14 geological clay samples from Ghajn Tuffieħa slopes. The group included also a small group of samples from Punic pottery found by Peet, inv. no. 100070-100075 (See Chapter 6). Among the prehistoric samples, there were also two Mycenaean type pottery fragments, BN/P7, found in the Double Chapel of the Borġ in-Nadur temple during Murray's excavations in 1926-1927 (Tanasi 2011,

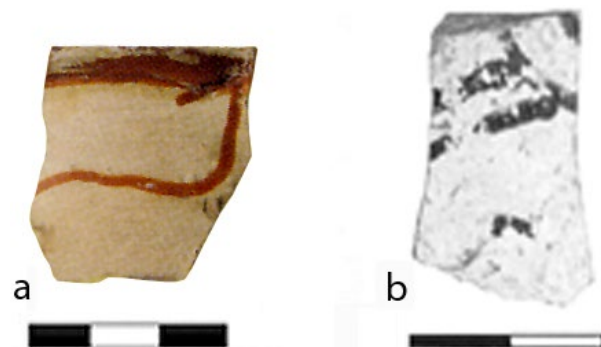


Figure 1. a) LH IIIB kylix fragment BN/P from the Double Chapel of the Borġ in-Nadur temple (Tanasi 2011); b) LHIIIB/IIIC body fragment of a closed shape from Tas-Silġ South (Sagona 2015).

pp. 139-142) (Figure 1a), and 2169/30 found in layer 2169 in Area C (CG3) of the 1995-2005 excavations by the University of Malta excavations at Tas-Silġ South (Vella *et al.* 2015, pp. 80-81; Sagona 2015, pp. 81, 82, fig. 1:121:7; see chapter 3) (Figure 1b). The example from Borġ in-Nadur was already identified as a local production (Pirone and Tykot 2017); there remained the possibility that the other one from Tas-Silġ was actually imported from the Aegean and would, therefore, have functioned as reference to discriminate possible Aegean imports in the group of Baħrija pottery.

The analyses was conducted in summer 2017 at the National Museum of Archaeology, Valletta, on all the Maltese ceramic and geological samples using the setting 50 kV (kilovolts) and 35 μ A (microamps) for the

primary X-ray beam, and using a filter (12 mil Al + 1 mil Ti + 6 mil Cu) which for the secondary X-rays coming back from the sample removes much of the background thereby providing greater precision and sensitivity for trace elements rubidium (Rb), strontium (Sr), yttrium (Y), zirconium (Zr), and niobium (Nb). The Bruker Tracer 5i was positioned upright and the samples carefully balanced on top of the collimator. Both the inner and outer surfaces and the edges, whenever possible for each of the ceramic samples, were analyzed for 45 seconds (Tykot *et al.* 2013). Quantitative values in ppm for each trace element were obtained by calibrating the raw data using the Bruker 5i calibration software package. The calibrated values obtained for each of the trace elements were then averaged for each sample (Table 1) and statistically analyzed using

Site	Sample	Context	USF#	Fe	Rb	Sr	Y	Zr	Nb
Borġ in-Nadur temple	BN/P7	1926-1927 excavation	31999	1.53	56	182	12	65	-2
Tas-Silġ South	2169/30	1995-2003 excavation	32000	1.28	40	184	12	69	0
Qlejgha tal-Baħrija	100034a	1909 excavation	32001	1.47	29	194	13	99	6
Qlejgha tal-Baħrija	100034b	1909 excavation	32002	1.50	33	176	12	92	5
Qlejgha tal-Baħrija	100034c	1909 excavation	32003	1.52	34	202	12	81	3
Qlejgha tal-Baħrija	100034d	1909 excavation	32004	1.47	25	179	11	96	4
Qlejgha tal-Baħrija	100034e	1909 excavation	32005	1.49	42	253	13	92	4
Qlejgha tal-Baħrija	100034f	1909 excavation	32006	1.76	31	272	13	112	8
Qlejgha tal-Baħrija	100034g	1909 excavation	32007	1.61	39	242	13	101	5
Qlejgha tal-Baħrija	100034h	1909 excavation	32008	1.75	45	167	13	90	5
Qlejgha tal-Baħrija	100034i	1909 excavation	32009	1.55	36	264	13	86	6
Qlejgha tal-Baħrija	100034j	1909 excavation	32010	1.59	41	199	13	88	4
Qlejgha tal-Baħrija	100034k	1909 excavation	32011	1.93	38	197	12	82	4
Qlejgha tal-Baħrija	100034l	1909 excavation	32012	1.56	36	223	13	103	7
Qlejgha tal-Baħrija	100034m	1909 excavation	32013	1.92	44	225	13	96	8
Qlejgha tal-Baħrija	100061a	1909 excavation	32014	1.39	21	187	12	91	4
Qlejgha tal-Baħrija	100061b	1909 excavation	32015	1.55	31	317	13	95	6
Qlejgha tal-Baħrija	100061c	1909 excavation	32016	1.78	23	213	12	89	5
Qlejgha tal-Baħrija	100061d	1909 excavation	32017	1.68	52	187	14	88	6
Qlejgha tal-Baħrija	100061e	1909 excavation	32018	1.74	33	182	12	94	5
Qlejgha tal-Baħrija	100061f	1909 excavation	32019	1.46	38	184	13	100	5
Qlejgha tal-Baħrija	100061g	1909 excavation	32020	1.57	41	261	13	90	4
Qlejgha tal-Baħrija	100061h	1909 excavation	32021	1.44	36	241	12	90	4
Qlejgha tal-Baħrija	100061i	1909 excavation	32022	1.41	34	377	12	87	3
Qlejgha tal-Baħrija	100061j	1909 excavation	32023	1.54	16	217	12	100	6

Table 1. Trace Elemental Compositions (ppm) for each sample

Site	Sample	Context	USF#	Fe	Rb	Sr	Y	Zr	Nb
Qlejgha tal-Bahrija	100061k	1909 excavation	32024	1.21	37	182	12	86	3
Qlejgha tal-Bahrija	100061l	1909 excavation	32025	1.39	34	184	12	76	3
Qlejgha tal-Bahrija	100061m	1909 excavation	32026	1.29	27	244	12	90	3
Qlejgha tal-Bahrija	100061n	1909 excavation	32027	1.29	41	246	13	89	4
Qlejgha tal-Bahrija	100035a	1909 excavation	32028	1.72	26	233	12	93	6
Qlejgha tal-Bahrija	100035b	1909 excavation	32029	1.36	26	186	11	78	3
Qlejgha tal-Bahrija	100035c	1909 excavation	32030	1.47	30	179	12	98	8
Qlejgha tal-Bahrija	100035d	1909 excavation	32031	1.40	35	216	12	85	4
Qlejgha tal-Bahrija	100035e	1909 excavation	32032	1.31	27	220	11	80	2
Qlejgha tal-Bahrija	100035f	1909 excavation	32033	1.60	31	164	12	87	5
Qlejgha tal-Bahrija	100042a	1909 excavation	32034	1.58	40	237	12	86	5
Qlejgha tal-Bahrija	100042b	1909 excavation	32035	1.33	27	227	12	83	4
Qlejgha tal-Bahrija	100042c	1909 excavation	32036	1.32	30	262	12	86	4
Qlejgha tal-Bahrija	100042d	1909 excavation	32037	1.79	32	172	12	89	6
Qlejgha tal-Bahrija	100042e	1909 excavation	32038	1.61	35	157	13	101	6
Qlejgha tal-Bahrija	100042f	1909 excavation	32039	1.49	32	186	12	92	5
Qlejgha tal-Bahrija	100042g	1909 excavation	32040	1.74	38	254	12	98	5
Qlejgha tal-Bahrija	100042h	1909 excavation	32041	1.33	33	180	12	80	2
Qlejgha tal-Bahrija	100042i	1909 excavation	32042	1.53	39	182	12	86	6
Qlejgha tal-Bahrija	100042j	1909 excavation	32043	1.32	37	259	12	95	4
Qlejgha tal-Bahrija	100042k	1909 excavation	32044	1.56	38	261	12	96	5
Qlejgha tal-Bahrija	100042l	1909 excavation	32045	1.59	30	199	12	88	4
Qlejgha tal-Bahrija	100031a	1909 excavation	32046	1.30	31	178	12	95	3
Qlejgha tal-Bahrija	100031b	1909 excavation	32047	1.67	41	251	13	92	4
Qlejgha tal-Bahrija	100031c	1909 excavation	32048	1.55	41	271	13	99	5
Qlejgha tal-Bahrija	100031d	1909 excavation	32049	1.51	43	257	13	93	5
Qlejgha tal-Bahrija	100031e	1909 excavation	32050	1.13	27	196	12	82	3
Qlejgha tal-Bahrija	100031f	1909 excavation	32051	1.55	45	213	13	85	5
Qlejgha tal-Bahrija	100031g	1909 excavation	32052	1.65	44	275	13	95	5
Qlejgha tal-Bahrija	100040a	1909 excavation	32053	1.68	22	253	12	94	6
Qlejgha tal-Bahrija	100040b	1909 excavation	32054	1.56	39	194	12	89	4
Qlejgha tal-Bahrija	100040c	1909 excavation	32055	1.66	32	249	13	90	4
Qlejgha tal-Bahrija	100040d	1909 excavation	32056	1.71	44	238	13	93	5
Qlejgha tal-Bahrija	100040e	1909 excavation	32057	1.63	42	284	13	93	5
Qlejgha tal-Bahrija	100040f	1909 excavation	32058	1.50	35	238	13	97	5
Qlejgha tal-Bahrija	100040g	1909 excavation	32059	1.19	25	215	11	81	4
Qlejgha tal-Bahrija	100040h	1909 excavation	32060	1.19	32	206	12	78	3

Table 1. Continued.

Site	Sample	Context	USF#	Fe	Rb	Sr	Y	Zr	Nb
Qlejgha tal-Bahrija	100040i	1909 excavation	32061	1.68	24	286	12	96	6
Qlejgha tal-Bahrija	100040j	1909 excavation	32062	1.55	38	213	12	87	5
Qlejgha tal-Bahrija	100040k	1909 excavation	32063	1.20	32	254	11	80	3
Qlejgha tal-Bahrija	100040l	1909 excavation	32064	1.41	19	192	12	91	3
Qlejgha tal-Bahrija	100040m	1909 excavation	32065	1.43	38	181	11	76	2
Qlejgha tal-Bahrija	100040n	1909 excavation	32066	1.77	42	260	13	95	6
Qlejgha tal-Bahrija	100040o	1909 excavation	32067	1.71	36	318	13	96	6
Qlejgha tal-Bahrija	100040p	1909 excavation	32068	1.27	26	209	12	79	3
Qlejgha tal-Bahrija	100040q	1909 excavation	32069	1.19	20	274	11	86	3
Qlejgha tal-Bahrija	100039a	1909 excavation	32070	1.72	42	208	13	84	5
Qlejgha tal-Bahrija	100039b	1909 excavation	32071	1.50	44	263	13	93	5
Qlejgha tal-Bahrija	100039c	1909 excavation	32072	1.60	46	260	14	96	6
Qlejgha tal-Bahrija	100039d	1909 excavation	32073	1.38	27	180	12	88	5
Qlejgha tal-Bahrija	100037a	1909 excavation	32074	1.44	32	176	12	88	4
Qlejgha tal-Bahrija	100037b	1909 excavation	32075	1.33	34	222	13	93	5
Qlejgha tal-Bahrija	100041a	1909 excavation	32076	1.49	37	260	13	97	5
Qlejgha tal-Bahrija	100041b	1909 excavation	32077	1.47	41	275	13	82	3
Qlejgha tal-Bahrija	100041c	1909 excavation	32078	1.58	34	234	13	90	6
Qlejgha tal-Bahrija	100041d	1909 excavation	32079	1.28	30	184	11	73	2
Qlejgha tal-Bahrija	100041e	1909 excavation	32080	1.49	33	176	12	87	5
Qlejgha tal-Bahrija	100041f	1909 excavation	32081	1.54	36	168	12	93	5
Qlejgha tal-Bahrija	100041g	1909 excavation	32082	1.48	38	166	12	85	5
Qlejgha tal-Bahrija	100041h	1909 excavation	32083	1.49	22	221	12	95	4
Qlejgha tal-Bahrija	100041i	1909 excavation	32084	2.01	52	210	14	104	7
Qlejgha tal-Bahrija	100041j	1909 excavation	32085	1.34	32	174	13	93	5
Qlejgha tal-Bahrija	100041k	1909 excavation	32086	1.79	23	197	12	95	5
Qlejgha tal-Bahrija	100041l	1909 excavation	32087	1.55	45	225	13	94	5
Qlejgha tal-Bahrija	100041m	1909 excavation	32088	1.36	34	188	12	82	3
Qlejgha tal-Bahrija	100041n	1909 excavation	32089	1.29	35	175	13	89	4
Qlejgha tal-Bahrija	100043a	1909 excavation	32090	1.32	27	179	12	94	4
Qlejgha tal-Bahrija	100043b	1909 excavation	32091	1.32	33	214	12	81	2
Qlejgha tal-Bahrija	100043c	1909 excavation	32092	1.50	37	133	13	106	6
Qlejgha tal-Bahrija	100043d	1909 excavation	32093	1.46	35	212	12	90	4
Qlejgha tal-Bahrija	100043e	1909 excavation	32094	1.46	39	231	12	86	3
Qlejgha tal-Bahrija	100038a	1909 excavation	32095	1.16	33	198	11	83	3
Qlejgha tal-Bahrija	100038b	1909 excavation	32096	1.58	41	170	12	88	4
Qlejgha tal-Bahrija	100038c	1909 excavation	32097	1.34	32	149	12	77	4

Table 1. Continued.

Site	Sample	Context	USF#	Fe	Rb	Sr	Y	Zr	Nb
Qlejgha tal-Bahrija	100038d	1909 excavation	32098	1.29	28	222	12	96	6
Qlejgha tal-Bahrija	100038e	1909 excavation	32099	1.30	40	241	13	90	5
Qlejgha tal-Bahrija	100038f	1909 excavation	32100	1.41	39	250	13	99	5
Qlejgha tal-Bahrija	100038g	1909 excavation	32101	1.59	37	155	12	87	4
Qlejgha tal-Bahrija	100038h	1909 excavation	32102	1.46	42	280	13	106	5
Qlejgha tal-Bahrija	100038i	1909 excavation	32103	1.64	38	265	12	93	5
Qlejgha tal-Bahrija	100038j	1909 excavation	32104	1.36	39	293	13	101	5
Qlejgha tal-Bahrija	100064a	1909 excavation	32105	1.68	45	159	13	86	6
Qlejgha tal-Bahrija	100064b	1909 excavation	32106	1.48	36	197	13	86	4
Qlejgha tal-Bahrija	100064c	1909 excavation	32107	1.62	40	171	12	83	4
Qlejgha tal-Bahrija	100064d	1909 excavation	32108	1.66	33	225	13	89	6
Qlejgha tal-Bahrija	100064e	1909 excavation	32109	0.99	24	153	11	75	2
Qlejgha tal-Bahrija	100064f	1909 excavation	32110	1.48	37	167	12	91	6
Qlejgha tal-Bahrija	100064g	1909 excavation	32111	1.34	33	188	12	88	4
Qlejgha tal-Bahrija	100064h	1909 excavation	32112	1.37	34	192	12	83	4
Qlejgha tal-Bahrija	100064i	1909 excavation	32113	1.64	46	172	13	89	6
Qlejgha tal-Bahrija	100064j	1909 excavation	32114	1.26	34	141	12	80	3
Qlejgha tal-Bahrija	100064k	1909 excavation	32115	1.18	27	235	11	78	1
Qlejgha tal-Bahrija	100064l	1909 excavation	32116	1.64	42	219	13	84	4
Qlejgha tal-Bahrija	100064m	1909 excavation	32117	1.31	38	237	13	95	6
Qlejgha tal-Bahrija	100064n	1909 excavation	32118	1.72	34	247	13	94	6
Qlejgha tal-Bahrija	100064o	1909 excavation	32119	1.26	30	175	12	81	4
Qlejgha tal-Bahrija	100109a	1909 excavation	32120	1.40	19	218	11	88	4
Qlejgha tal-Bahrija	100109b	1909 excavation	32121	1.44	38	243	13	91	5
Qlejgha tal-Bahrija	100052a	1909 excavation	32122	1.50	39	277	13	91	5
Qlejgha tal-Bahrija	100033a	1909 excavation	32123	1.57	28	267	12	89	5
Qlejgha tal-Bahrija	100033b	1909 excavation	32124	1.60	28	160	11	79	4
Qlejgha tal-Bahrija	100033c	1909 excavation	32125	1.26	30	200	12	85	2
Qlejgha tal-Bahrija	100033d	1909 excavation	32126	1.50	43	278	13	98	6
Qlejgha tal-Bahrija	100033e	1909 excavation	32127	1.46	33	207	12	85	5
Qlejgha tal-Bahrija	100033f	1909 excavation	32128	1.54	31	212	12	86	4
Qlejgha tal-Bahrija	100033g	1909 excavation	32129	1.48	30	220	13	92	6
Qlejgha tal-Bahrija	100033h	1909 excavation	32130	1.47	48	242	13	91	6
Qlejgha tal-Bahrija	100033i	1909 excavation	32131	1.62	35	181	12	97	5
Qlejgha tal-Bahrija	100033j	1909 excavation	32132	1.51	40	182	12	85	5
Qlejgha tal-Bahrija	100033k	1909 excavation	32133	1.67	30	191	12	91	6
Qlejgha tal-Bahrija	100033l	1909 excavation	32134	1.57	40	241	13	85	5

Table 1. Continued.

Site	Sample	Context	USF#	Fe	Rb	Sr	Y	Zr	Nb
Qlejgha tal-Bahrija	100033m	1909 excavation	32135	1.29	24	225	11	83	4
Qlejgha tal-Bahrija	100033n	1909 excavation	32136	1.20	24	140	10	69	1
Qlejgha tal-Bahrija	100033o	1909 excavation	32137	1.64	33	203	13	94	5
Qlejgha tal-Bahrija	100036a	1909 excavation	32138	1.29	37	244	12	96	4
Qlejgha tal-Bahrija	100036b	1909 excavation	32139	1.41	40	240	12	85	3
Qlejgha tal-Bahrija	100036c	1909 excavation	32140	1.67	44	216	12	87	6
Qlejgha tal-Bahrija	100036d	1909 excavation	32141	1.23	31	163	11	79	2
Qlejgha tal-Bahrija	100036e	1909 excavation	32142	1.63	39	174	12	95	6
Qlejgha tal-Bahrija	100036f	1909 excavation	32143	1.49	28	188	11	82	4
Qlejgha tal-Bahrija	100032a	1909 excavation	32144	1.42	33	191	13	80	4
Qlejgha tal-Bahrija	100032b	1909 excavation	32145	1.91	33	201	12	85	5
Qlejgha tal-Bahrija	100032c	1909 excavation	32146	1.86	43	250	13	89	5
Qlejgha tal-Bahrija	100032d	1909 excavation	32147	1.72	44	231	13	99	6
Qlejgha tal-Bahrija	100032e	1909 excavation	32148	1.73	40	253	13	92	6
Qlejgha tal-Bahrija	100032f	1909 excavation	32149	1.73	31	211	12	88	5
Qlejgha tal-Bahrija	100032g	1909 excavation	32150	1.51	25	184	11	83	4
Qlejgha tal-Bahrija	100032h	1909 excavation	32151	1.81	22	355	14	114	9
Qlejgha tal-Bahrija	100032i	1909 excavation	32152	1.80	30	189	12	85	4
Qlejgha tal-Bahrija	100032j	1909 excavation	32153	1.62	31	159	12	87	5
Qlejgha tal-Bahrija	100032k	1909 excavation	32154	1.70	36	237	12	92	6
Qlejgha tal-Bahrija	100032l	1909 excavation	32155	1.53	39	201	12	92	5
Qlejgha tal-Bahrija	100032m	1909 excavation	32156	1.62	40	199	13	87	4
Qlejgha tal-Bahrija	100032n	1909 excavation	32157	1.42	35	255	13	98	6
Qlejgha tal-Bahrija	100032o	1909 excavation	32158	1.91	39	129	12	87	6
Qlejgha tal-Bahrija	100060a	1909 excavation	32159	1.38	41	215	12	87	4
Qlejgha tal-Bahrija	100060b	1909 excavation	32160	1.28	40	243	12	92	4
Qlejgha tal-Bahrija	100048a	1909 excavation	32161	0.64	19	163	11	83	1
Qlejgha tal-Bahrija	100048b	1909 excavation	32162	1.58	39	149	13	80	5
Qlejgha tal-Bahrija	100051a	1909 excavation	32163	1.25	31	150	12	90	4
Qlejgha tal-Bahrija	100051b	1909 excavation	32164	1.24	33	166	12	84	3
Qlejgha tal-Bahrija	100051c	1909 excavation	32165	1.41	35	181	12	83	3
Qlejgha tal-Bahrija	100051d	1909 excavation	32166	1.27	26	262	12	90	3
Qlejgha tal-Bahrija	100049a	1909 excavation	32167	1.43	41	228	13	91	5
Qlejgha tal-Bahrija	100053a	1909 excavation	32168	1.58	39	137	13	89	6
Qlejgha tal-Bahrija	100055a	1909 excavation	32169	0.96	29	204	11	75	2
Qlejgha tal-Bahrija	100057a	1909 excavation	32170	1.36	33	221	11	81	3
Qlejgha tal-Bahrija	100058a	1909 excavation	32171	1.49	38	282	12	95	4

Table 1. Continued.

Site	Sample	Context	USF#	Fe	Rb	Sr	Y	Zr	Nb
Qlejgha tal-Bahrija	100086a	1909 excavation	32172	1.84	29	322	13	101	7
Qlejgha tal-Bahrija	100063a	1909 excavation	32173	1.89	41	182	13	98	6
Qlejgha tal-Bahrija	100059a	1909 excavation	32174	1.45	40	262	12	92	5
Qlejgha tal-Bahrija	100025a	1909 excavation	32175	1.01	31	181	11	82	3
Qlejgha tal-Bahrija	100025b	1909 excavation	32176	1.35	27	153	11	79	4
Qlejgha tal-Bahrija	100025c	1909 excavation	32177	1.18	31	223	12	90	3
Qlejgha tal-Bahrija	100022 a	1909 excavation	32178	1.50	33	193	12	102	5
Qlejgha tal-Bahrija	100022 b	1909 excavation	32179	0.96	31	205	12	94	2
Qlejgha tal-Bahrija	100023a	1909 excavation	32180	1.56	33	242	13	108	5
Qlejgha tal-Bahrija	100023b	1909 excavation	32181	1.42	32	169	12	90	4
Qlejgha tal-Bahrija	100026a	1909 excavation	32182	1.71	40	149	13	108	8
Qlejgha tal-Bahrija	100026b	1909 excavation	32183	1.39	39	242	13	101	6
Qlejgha tal-Bahrija	100027a	1909 excavation	32184	1.21	30	203	12	84	4
Qlejgha tal-Bahrija	100027a	1909 excavation	32185	1.29	36	175	12	83	6
Qlejgha tal-Bahrija	100028a	1909 excavation	32186	1.28	25	179	12	88	5
Qlejgha tal-Bahrija	100029a	1909 excavation	32187	1.10	31	274	11	79	2
Qlejgha tal-Bahrija	100096a	1909 excavation	32188	1.61	43	232	13	90	6
Qlejgha tal-Bahrija	100096b	1909 excavation	32189	1.28	26	159	11	85	3
Qlejgha tal-Bahrija	100096c	1909 excavation	32190	1.66	53	235	14	105	7
Qlejgha tal-Bahrija	100096d	1909 excavation	32191	1.72	39	107	13	88	6
Qlejgha tal-Bahrija	100075a	1909 excavation	32192	0.93	27	260	11	84	1
Qlejgha tal-Bahrija	100075b	1909 excavation	32193	1.28	42	194	12	72	3
Qlejgha tal-Bahrija	100075c	1909 excavation	32194	1.33	34	219	12	69	1
Qlejgha tal-Bahrija	100072a	1909 excavation	32195	1.06	31	250	12	78	2
Qlejgha tal-Bahrija	100072b	1909 excavation	32196	1.80	29	281	14	102	6
Qlejgha tal-Bahrija	100072c	1909 excavation	32197	1.87	18	226	13	100	6
Qlejgha tal-Bahrija	100072d	1909 excavation	32198	0.85	15	188	11	73	1
Qlejgha tal-Bahrija	100071a	1909 excavation	32199	1.49	37	214	13	84	4
Qlejgha tal-Bahrija	100071b	1909 excavation	32200	1.58	47	92	14	132	7
Qlejgha tal-Bahrija	100071c	1909 excavation	32201	2.15	22	266	14	109	8
Qlejgha tal-Bahrija	100071d	1909 excavation	32202	1.80	42	268	13	81	3
Qlejgha tal-Bahrija	100070a	1909 excavation	32203	1.12	27	225	11	74	2
Qlejgha tal-Bahrija	100074a	1909 excavation	32204						
Qlejgha tal-Bahrija	100074b	1909 excavation	32205						
Qlejgha tal-Bahrija	100074c	1909 excavation	32206	1.92	64	131	17	72	3
Qlejgha tal-Bahrija	100074d	1909 excavation	32207	1.75	59	117	16	69	3
Qlejgha tal-Bahrija	100056a	1909 excavation	32208	1.55	24	260	13	113	6

Table 1. Continued.

Site	Sample	Context	USF#	Fe	Rb	Sr	Y	Zr	Nb
Qlejgha tal-Bahrija	100073a	1909 excavation	32209	0.71	24	173	10	77	0
Qlejgha tal-Bahrija	100073b	1909 excavation	32210	1.23	35	145	12	99	3
Qlejgha tal-Bahrija	100073c	1909 excavation	32211	1.00	28	160	12	126	3
Qlejgha tal-Bahrija	100073d	1909 excavation	32212	1.20	26	206	12	107	3
Qlejgha tal-Bahrija	100073e	1909 excavation	32213	1.11	31	190	11	81	2
Qlejgha tal-Bahrija	100073f	1909 excavation	32214	1.22	20	377	11	96	3
Qlejgha tal-Bahrija	100073g	1909 excavation	32215	0.96	25	82	10	112	2
Qlejgha tal-Bahrija	100073h	1909 excavation	32216	1.19	28	233	12	84	2
Qlejgha tal-Bahrija	100073i	1909 excavation	32217	1.40	34	434	12	101	4
Qlejgha tal-Bahrija	100073j	1909 excavation	32218	1.84	44	231	14	96	7
Qlejgha tal-Bahrija	100073k	1909 excavation	32219						
Qlejgha tal-Bahrija	100073l	1909 excavation	32220	1.40	44	346	13	89	4
Qlejgha tal-Bahrija	100073m	1909 excavation	32221	1.47	41	235	12	83	4
Qlejgha tal-Bahrija	100073m	1909 excavation	32222	1.19	34	220	13	92	1
Qlejgha tal-Bahrija	100073o	1909 excavation	32223						
Qlejgha tal-Bahrija	100073p	1909 excavation	32224	1.48	42	309	13	114	5
Qlejgha tal-Bahrija	100073q	1909 excavation	32225	1.08	16	156	10	71	0
Qlejgha tal-Bahrija	100073r	1909 excavation	32226	1.32	29	236	12	118	4
Qlejgha tal-Bahrija	100073s	1909 excavation	32227	1.32	34	355	12	85	3
Qlejgha tal-Bahrija	100073t	1909 excavation	32228	1.09	30	399	12	91	2
Qlejgha tal-Bahrija	2761	1909 excavation	32229	1.46	37	208	12	90	3
Qlejgha tal-Bahrija	2763	1909 excavation	32230	1.56	30	164	12	100	4
Qlejgha tal-Bahrija	2756	1909 excavation	32231	1.49	35	238	12	92	3
Qlejgha tal-Bahrija	B/P50	1959 excavation	32232	1.64	38	205	12	98	6
Qlejgha tal-Bahrija	2760	1909 excavation	32233	1.68	35	236	13	98	5
Qlejgha tal-Bahrija	2755	1909 excavation	32234	1.58	30	241	12	104	7
Qlejgha tal-Bahrija	2664	1909 excavation	32235	1.60	19	211	12	104	5
Qlejgha tal-Bahrija	2723	1909 excavation	32236	1.00	25	165	10	69	1
Qlejgha tal-Bahrija	2651	1909 excavation	32237	1.57	38	211	13	90	5
Qlejgha tal-Bahrija	2649	1909 excavation	32238	1.41	37	250	12	90	3
Qlejgha tal-Bahrija	2702	1909 excavation	32239	1.37	36	116	11	70	3
Qlejgha tal-Bahrija	2746	1909 excavation	32240	1.44	40	222	13	100	5
Qlejgha tal-Bahrija	2752	1909 excavation	32241	1.62	41	226	13	89	4
Qlejgha tal-Bahrija	100083b	1909 excavation	32242	1.20	34	213	12	82	4
Qlejgha tal-Bahrija	100085a	1909 excavation	32243	1.28	30	141	11	84	3
Qlejgha tal-Bahrija	100088d	1909 excavation	32244	0.76	35	161	12	93	5
Qlejgha tal-Bahrija	100088b	1909 excavation	32245	1.35	34	286	12	88	3

Table 1. Continued.

Site	Sample	Context	USF#	Fe	Rb	Sr	Y	Zr	Nb
Qlejgha tal-Bahrija	100088a	1909 excavation	32246	1.48	43	165	13	95	6
Qlejgha tal-Bahrija	100084a	1909 excavation	32247	1.40	32	111	12	95	4
Qlejgha tal-Bahrija	100088c	1909 excavation	32248	1.45	32	164	12	91	4
Qlejgha tal-Bahrija	100087c	1909 excavation	32249	1.34	33	193	13	102	7
Qlejgha tal-Bahrija	100087d	1909 excavation	32250	1.75	32	341	13	102	6
Qlejgha tal-Bahrija	2722	1909 excavation	32251	1.43	40	250	12	91	4
Qlejgha tal-Bahrija	2744	1909 excavation	32252	1.52	34	224	12	83	5
Qlejgha tal-Bahrija	2757	1909 excavation	32253	1.68	44	158	12	87	6
Qlejgha tal-Bahrija	4924	1909 excavation	32254	0.85	21	114	10	71	1
Qlejgha tal-Bahrija	2733	1909 excavation	32255	1.51	40	282	13	96	4
Qlejgha tal-Bahrija	2735	1909 excavation	32256	1.77	50	267	14	102	6
Qlejgha tal-Bahrija	2736	1909 excavation	32257	1.70	42	210	14	106	6
Qlejgha tal-Bahrija	2737	1909 excavation	32258	1.82	46	246	13	85	4
Qlejgha tal-Bahrija	2703	1909 excavation	32259	1.49	44	241	12	88	4
Qlejgha tal-Bahrija	2717	1909 excavation	32260	1.64	39	177	12	82	4
Qlejgha tal-Bahrija	B/P64	1959 excavation	32261	1.59	36	205	13	97	6
Qlejgha tal-Bahrija	B/P206	1959 excavation	32262	1.61	33	211	12	85	4
Qlejgha tal-Bahrija	2652	1959 excavation	32263	1.39	33	237	12	93	5
Qlejgha tal-Bahrija	2666	1909 excavation	32264	1.50	29	260	12	106	7
Qlejgha tal-Bahrija	2748	1909 excavation	32265	1.44	34	230	12	89	5
Qlejgha tal-Bahrija	2667	1909 excavation	32266	1.26	32	163	12	82	4
Qlejgha tal-Bahrija	2770	1909 excavation	32267	1.56	45	233	13	87	3
Qlejgha tal-Bahrija	2707	1909 excavation	32268	1.70	45	246	13	87	5
Qlejgha tal-Bahrija	2709	1909 excavation	32269	1.44	41	234	13	82	4
Qlejgha tal-Bahrija	2720	1909 excavation	32270	1.48	39	294	13	92	6
Qlejgha tal-Bahrija	2670	1909 excavation	32271	1.56	36	157	13	84	5
Qlejgha tal-Bahrija	2656	1909 excavation	32272	1.51	41	245	13	92	6
Qlejgha tal-Bahrija	2730	1909 excavation	32273	1.74	24	236	12	90	5
Qlejgha tal-Bahrija	2706	1909 excavation	32274	1.58	35	185	12	84	3
Għajn Tuffieħa slopes	Clay	–	–	1.16	53	290	13	95	5
Għajn Tuffieħa slopes	Clay	–	–	1.01	47	294	12	91	4
Għajn Tuffieħa slopes	Clay	–	–	1.15	52	313	13	88	5
Għajn Tuffieħa slopes	Clay	–	–	0.99	43	243	12	82	3
Għajn Tuffieħa slopes	Clay	–	–	1.30	56	303	13	97	6
Għajn Tuffieħa slopes	Clay	–	–	1.32	55	299	13	97	5
Għajn Tuffieħa slopes	Clay	–	–	0.95	43	282	12	88	3

Table 1. Continued.

principal component analysis (PCA) applying a Direct Oblimin rotation. The IBM SPSS Statistics 25 software package was used to conduct the statistical analysis.

3. Results

The results of the PCA shows that the vast majority of ceramic samples included in this study can be separated into three clusters, A-C. (Figure 2).

The majority of ceramic samples and all the geological clay samples cluster together in group A with the exception of six prehistoric samples (100064e, 100033n, 100048a, 100055a, 2723, 4924) and three Punic samples (100072d, 100073a, 100073q) clustering in group B and two Punic samples (100074c and 100074d) clustering in group C. There is nothing to suggest the potential cluster B and C represent ceramics made from non-local clays. The trace elemental composition of geological Maltese clays varies depending from where within the blue clay horizon the ancient potters extracted their raw clay materials (Pirone 2017). Therefore, they may also represent ceramics made from local Maltese clays from stratigraphic layers that were not sampled and analyzed for the present study. It is known that the calcium carbonate content of the clays varies throughout the Maltese clay formation but generally increases as the clay comes in greater contact with the underlying Globigerina Limestone (Pedley *et al.* 2002).

Changes in the amount of carbonate materials such as calcite affect the amount of Sr that is present (Chen *et al.* 2006). In a previous study (Pirone 2017; Pirone and Tykot 2017) it has been demonstrated that depending from where the clay was extracted from a clay outcrop and its proximity to the Greensand and Globigerina Limestone horizons, there can be considerable variation in the Rb, Sr and Zr trace elements. Based on this understanding of the geological reality of Maltese clays, it is reasonable to conclude that all three clusters represent clays of a Maltese origin and that Groups B and C contain samples demonstrating the potential variation in the trace elemental composition that is observed for the clay formation throughout the islands of Malta and Gozo. Furthermore, the results show that the majority of the ceramics was made with clays from a Maltese source similar in chemical composition to the clays found at Ghajn Tuffieħa. The other important finding is represented by the Mycenaean type fragment from Tas-Silġ South plotting within the main cluster A, together with the vast majority of the Baħrija local pottery and the other Mycenaean-type piece from the Borġ in-Nadur temple plotting in proximity of the main cluster, the local origin of which was already proven (Pirone 2017). Such a discovery seems to suggest the existence of a class of Maltese-Mycenaean pottery, comparable to the Italo-Mycenaean production of Aegean pottery classes in southern Italy (Tanasi *in press*). The last

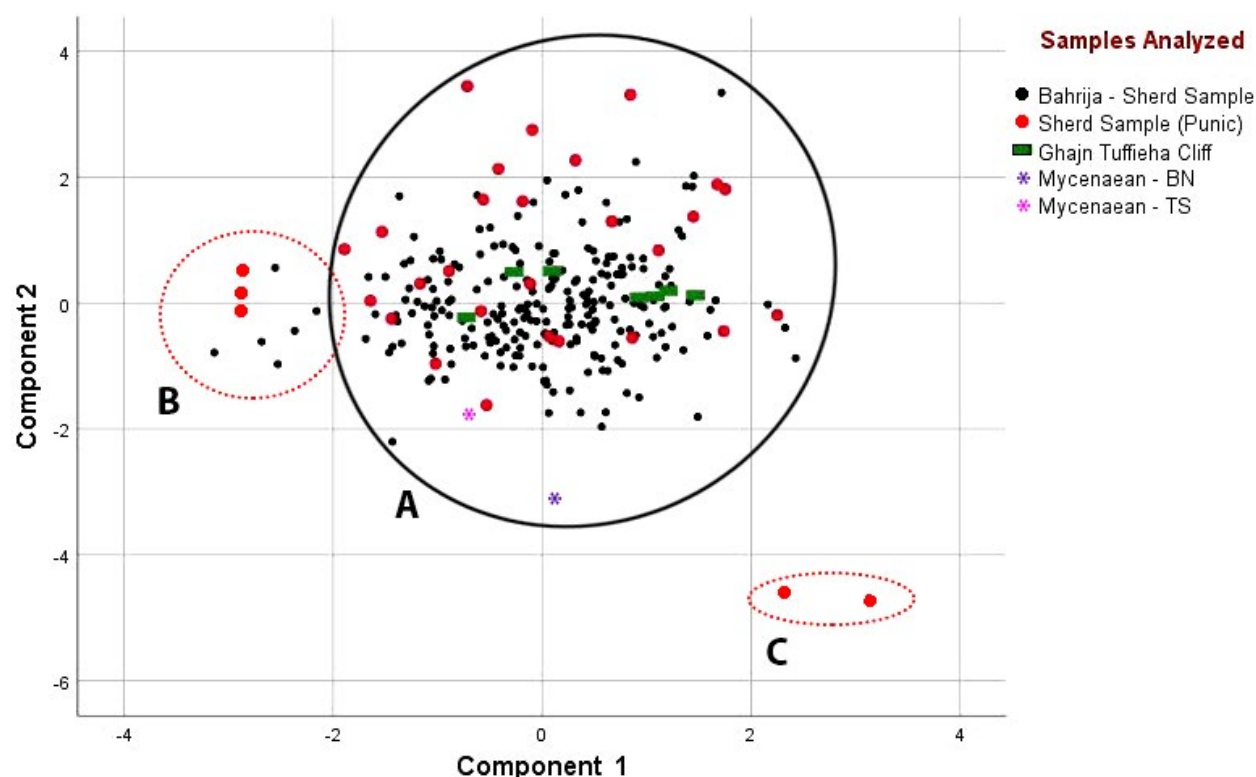


Figure 2. Principal component analysis of the trace elemental composition of all Baħrija ceramics and Maltese clay samples. The majority of the samples clusters together in group A, six prehistoric samples (100064e, 100033n, 100048a, 100055a, 2723, 4924) and three Punic samples (100072d, 100073a, 100073q) cluster in group B and two Punic samples (100074c and 100074d) cluster in group C. Ellipses are an approximation.

result emerging from this study is represented by the fact that those specimens discussed as having possible Sicilian and Aegean features (Tanasi in this volume) turned out to be all locally made.

Ultimately, the two samples 100074c and 100074d, clustered apart as group C, could be determined to potentially represent clay sources that may be statistically different from what can be described as having a Maltese clay origin. These samples were confirmed to be outliers using the Mahalanobis distance, and clearly plot separately from the vast majority of ceramic samples. One possible conclusion is that these samples potentially represent ceramics made with clays originating from outside the Maltese archipelago. Therefore, either the ceramic vessels or the clays from which they were made are foreign imports. However, analysis of additional clay sources are required in order to conclusively determine any of these outliers representing clays from source outside the Maltese islands. Alternatively, these two samples being outliers can simply be an anomaly brought about through contamination or some other error in analyzing these samples.

4. Conclusions

The results of the present study indicate that the vast majority of the samples analyzed for the Bahrija wares were made with local Maltese clays. In fact, with the exception of a few outliers, there is nothing to suggest differently and that the Bahrija ceramics are a product of local Maltese pottery production. Furthermore, the identification of a second example of locally made Mycenaean pottery testifies to the presence in Malta of the cultural phenomenon of Mycenaean-inspired pottery production, unknown so far in the history of the relationship between the Aegean and the Maltese archipelago.

References

- Barone, G., Mazzoleni, P., Raneri, S., Tanasi, D. and Giuffrida, A. 2015. Archaeometric Characterization of Middle Bronze Age Pottery from the Settlement at Borġ in-Nadur, in D. Tanasi and N. C. Vella (eds), *The late prehistory of Malta: Essays on Borġ in-Nadur and Other Sites*, Oxford: Archaeopress, pp. 99-111.
- Chen, J., Chen, Y., Liu, L., Ji, J., Balsam, W., Sun, Y., Lu, H. 2006. Zr/Rb ratio in the Chinese loess sequences and its implication for changes in the East Asian winter monsoon strength, *Geochimica et Cosmochimica Acta* 70.6, pp. 1471-1482.
- Hunt, A., Speakman, R. 2015. Portable XRF Analysis of Archaeological Sediments and Ceramics, *Journal of Archaeological Science* 53, pp. 1-13.
- Mommsen, H., Bonanno, A., Bonavita, K. C., Kakoulli, I., Musumeci, M., Sagona, C., Schwedt, A., Vella, N. C., Zacharias, N. 2006. Characterization of Maltese Pottery of the Late Neolithic, Bronze Age and Punic Period by Neutron Activation Analysis, in M. Maggetti, B. Messiga (eds), *Geomaterials in Cultural Heritage*, London: The Geological Society of London, pp. 81-89.
- Pedley, H. M., Hughes-Clarke, M., Galea, P. 2002. *Limestone Isles in a Crystal Sea: The Geology of the Maltese Islands*, Malta: Publishers Enterprises Group Ltd.
- Peet, T. E. 1910. Contributions to the study of the Prehistoric Period in Malta, *Papers of the British School at Rome* 5, pp. 141-163.
- Pirone, F. 2017. *Trade, Interaction and Change: Trace Elemental Characterization of Maltese Neolithic to Middle Bronze Age Ceramics Using a Portable X-ray Fluorescence Spectrometer*, PhD dissertation, University of South Florida, Tampa, Florida, <https://scholarcommons.usf.edu/etd/6930>
- Pirone, F., Tykot, R. H. 2017. Trace Elemental Characterization of Maltese Pottery from the Late Neolithic to Middle Bronze Age, *Open Archaeology* 3, pp. 202-221.
- Sagona, C. 2015. The pottery, in A. Bonanno, N. C. Vella (eds), *Tas-Silġ, Marsaxlokk (Malta) II: Archaeological excavations conducted by the University of Malta, 1996-2005*, Leuven: Peeters, 1-513.
- Speakman, R., Little, N. C., Creel, D., Miller, M. R., Iñáñez, J. G. 2011. Sourcing ceramics with portable XRF spectrometers? A comparison with INAA using Mimbres pottery from the American Southwest, *Journal of Archaeological Science* 38, pp. 3483-3496.
- Tanasi, D. 2011. The Prehistoric Pottery, in D. Tanasi, N. C. Vella (eds), *Site, Artefacts, Landscape: Prehistoric Borġ in-Nadur, Malta*, Oxford: Archaeopress Open Source, pp. 71-158.
- Tanasi, D. in press, Sicily before the Greeks. The interaction with the Aegean and the Levant in the pre-colonial era, *Open Archaeology*, pp. 1-43.
- Trump, D. H. 1961. The Later Prehistory of Malta, *Proceedings of the Prehistoric Society* 27, pp. 253-262.
- Tykot, R. H. 2004. Scientific Methods and Applications to Archaeological Provenance Studies, in M. Martini, M. Milazzo, M. Piacentini (eds), *Physics Methods in Archaeometry*, Proceedings of the International School of Physics 'Enrico Fermi' Course CLIV, Bologna: Società Italiana di Fisica, pp. 407-432.
- Tykot, R. H. 2016. Using Non-Destructive Portable X-Ray Fluorescence Spectrometers on Stone, Ceramics, Metals, and Other Materials in Museums: Advantages and Limitations, *Applied Spectroscopy* 70.1, pp. 42-56.
- Tykot, R. H., White, N. M., Du Vernay, J. P., Freeman, J. S., Hays, C. T., Koppe, M., Hunt, C. N., Weinstein, R. A., Woodward, D. S. 2013. Advantages and Disadvantages of pXRF for Archaeological Ceramic Analysis: Prehistoric Pottery Distribution and Trade in NW Florida, in R. A. Armitage, J. H. Burton (eds), *Archaeological Chemistry VIII*, (ACS Symposium

Series), Washington, D.C.: American Chemical Society, pp. 233-244.
Vella, N. C., Mason, S., Farruggia, R., Zammit, M. E.
2015. The Stratigraphy, in A. Bonanno, N. C. Vella

(eds) *Tas-Silġ, Marsaxlokk (Malta) I: Archaeological Excavations conducted by the University of Malta, 1996-2005*, Leuven: Peeters, pp. 45-230.

Chapter 8.

Bahrija pottery production from an archaeometric perspective

Davide Tanasi, Daniele Brunelli, Valentina Cannavò,
Sara Tiziana Levi

1. Introduction

The end of prehistory in the Maltese archipelago is still the most problematic period in the archaeological research of the country. In the traditional sequence of Maltese prehistory, there is no placeholder for the Iron Age. There is instead an eight-century long Middle/Late Bronze Age (ca. 1500–700 BC) represented by the Borġ in-Nadur culture which in part *de facto* summarizes the Maltese Iron Age. The Phoenician colonization of the Island marked the end of prehistory in Malta, though its exact chronology is at the center of an open debate (Vella 2005; Sagona 2008, 2011). Certainly the arrival of a foreign culture did not put an end to the local production and the traditional culture kept on fading slowly and gradually into the Phoenician one around 700 BC.

In the absence of substantial cultural changes a progressive series of five pottery styles provides an internal chronological structure for this culture, though they are not yet supported by absolute dates, consisting of Early, Classic and Late Borġ in-Nadur (EBN, CBN, LBN), Painted Ware, and Bahrija (Tanasi 2015a; 2018). Painted Ware and Bahrija are traditionally considered to be the last expression of the local culture, chronologically parallel with the Sicilian Iron Age. For the repertoire of shapes, technology, and decoration techniques, Bahrija pottery represents a break with tradition (Trump 1961) and its introduction in the archipelago has been traditionally explained with a migratory phenomenon of new groups moving from southern Italy, towards western Sicily first and ultimately towards Malta (Evans 1953), on the basis of formal and stylistic analogies between the Bahrija pottery with the Proto-Elymian pottery from Sicily (Tusa 1992; Vella *et al.* 2011, p. 267).

Such Bahrija pottery has practically only been found in the eponymous settlement of Bahrija, on the eastern coast of Malta, associated with other cultural features typical of the Late Borġ in-Nadur *facies*. Such evidence seems to suggest that it cannot be considered as the indicator of a new *facies* but that it is instead just a pottery style characterizing the last phase of Borġ in-Nadur culture in a specific site, which was probably

directly affected by the arrival of newcomers (Bonanno 2017).

The recent overall reappraisal of the unpublished ceramic assemblage collected during the excavations carried out at Qlejġha tal-Bahrija represents a unique opportunity to focus on the technological aspects of the production, trying to shed light on the issue of the break with the tradition and the impact of external influxes (see chapter 3). An archaeometric study of the Bahrija pottery will help to finally understand the role of the class of materials with respect to the previous Borġ in-Nadur pottery production and to eventually revise the interpretation of the site of Qlejġha tal-Bahrija as a venue for an enclave of foreigners.

2. Materials

The materials selected for the present study include the main classes of the pottery attested at the site of Qlejġha tal-Bahrija from the excavations carried out by T. E. Peet (1910) and D. H. Trump (1961). The direct examination of a large unpublished group of materials was carried out in the summer of 2017 and led to the definition of several classes of pottery based on the features of their fabric: three types of fine table ware [*orange ware*, *grey ware*, and ‘traditional’ *Bahrija ware*, the only one known in literature (Evans 1971)]; three of semi-fine/coarse ware (*orange-grey unslipped ware*, *dark yellow coarse ware* and *red-slipped coarse ware*), and one class of cooking ware. The orange-grey unslipped fabric has same features of Tanasi fabric 3 identified at Borġ in-Nadur settlement (Tanasi 2015a, tab. 3, p. 39; Barone *et al.* 2015, p. 101, tab. 2). In the assemblage from Qlejġha tal-Bahrija, the Borġ in-Nadur reddish yellow fabric with dark red to black mottled slip (Tanasi fabric 4: Barone *et al.* 2015, p. 100, tab. 1) as well as the Borġ in-Nadur painted/dribbled ware (Barone *et al.* 2015, p. 101, tab. 2), both chronologically attributed to Trump’s phase II B3 (Tanasi 2015a tab. 3, p. 39) were also both well attested.

The *orange ware* has a medium/hard fabric, with lithic inclusions (very fine 10%) and voids (very fine-fine 2%), dark orange/light brown surfaces (from 7.5YR 6/6 to

10YR 6/8), and a blackish core; sometimes it shows a red slip or in its absence surfaces are always burnished.

The *grey ware* shows a very hard fabric, with no detectable inclusions and voids (very fine-fine 2%), grey surfaces with blackish core; it is unslipped, but surfaces are always burnished. A class of cups belonging to this category have a plastic decoration or dark red burnished slip. Due to the presence of dark grits in the fabric and a peculiar typology, this class has also been cautiously interpreted as being possible imports from Middle Bronze Age Sicily (Vella *et al.* 2011).

The 'traditional' *Bahrija ware*, has a very fine hard fabric with very few voids and inclusions (15); surfaces are slipped in very dark brown (10YR 3/2) or black colour. It occurs mostly on bowls and dippers cups with the peculiar excised labyrinthine patterns filled with white paste.

The *orange-grey unslipped fabric* shows a very hard fabric, with lithic inclusions (very fine 10%) and voids (very fine-fine 2%) with orange-grey surface (from 5 YR 7/6 reddish yellow to 7.5 YR 7/3 pink), and a dark grey core (5 Y 4/1 dark grey); it is unslipped and generally undecorated.

The *dark yellow coarse ware* has a medium fabric, with lithic inclusions and chamotte (fine 15%) and voids (fine 15%), dark orange surfaces (7.5YR 6/6), and a dark grey core; it is always unslipped and sometimes it has plastic linear decoration.

The *red-slipped coarse ware* displays a very hard fabric with lithic and dark inclusions (very fine-fine 2%), darker core, very sandy surfaces, and very thin red slip.

Following the same protocol used with the pottery from Borġ in-Nadur *facies* found at the eponymous temple (Tanasi 2011a; Raneri *et al.* 2015), in order to characterize the pottery production documented at Qlejġha tal-Bahrija and to provide new data to the open debate on the existence of a Bahrija period, a selection of samples representing all the classes was subject to petrographic and chemical analyses.

In particular four examples of Grey Ware showing typical features of Sicilian Middle Bronze pottery production (100061B, 100050A, 100061E, 100061H), two examples of strainer spouted jars in painted ware (100051D, 100109A) and a wall fragment of painted ware (100109B), all traditionally considered as Sicilian imports (Vella *et al.* 2010) were analysed in order to clearly establish their origin. Finally a sample of a terracotta item, possibly a weight, (100006A) with a very peculiar fabric was analysed as its fabric appeared to be rather different and peculiar already during the macroscopic exam.

3. Methods

Thirty-seven samples (36 potsherds and 1 loom weight) representing different ware types identifiable in the Bahrija ceramic assemblage were selected for archaeometric investigation, petrography and chemistry (Table 1). Analyses were carried out at the University of Modena and Reggio Emilia (Italy) at the Department of Chemical and Geological Sciences and at the Centro Interdipartimentale Grandi Strumenti (CIGS).

Petrographic thin sections were described with a polarising microscope following the standard proposed by Whitbread (1989) and by Quinn (2013). Major elements bulk composition of 37 samples was assessed by X-ray fluorescence spectroscopy (XRF). Minor and trace elements were measured by XRF and Laser Ablations-Inductively coupled plasma mass spectroscopy (LA-ICP-MS). The latter technique was adopted to ensure the analyses of six samples for which only the small volume of material was available (<300 mg), not allowing the measurement by XRF of minor and trace elements.

XRF analysis was carried out with Philips PW 1480 instrument preparing boric acid tablets with 300 or 150 mg of calcinated powder. External standard calibration was based on GBW 07701-07711 international standards (Chunshu *et al.* 1996) following the procedure defined in Gazzulla Barreda *et al.* 2016. Detection limits for the analysed elements are as follows: Cu 50ppm; Zn 20ppm; As 10ppm; Pb 20ppm; V 10ppm; Cr 10ppm; Co 10ppm; Ni 10ppm; Ba 25ppm; Ce 20ppm; Nb 2ppm; Zr 50ppm; Sr 20ppm; Y 20ppm; La 25ppm; Rb 40ppm; Sb 20ppm.

LA-ICP-MS analyses were obtained by a Nd:YAG deep UV (213 nm) New Wave Research UP-213 laser ablation system (LA) coupled to a Thermo Fisher Scientific X-Series II Induced Coupled Plasma Mass Spectrometer (ICP-MS). Instrumental drift correction was computed following the procedure reported in Brunelli *et al.* 2013; using glass beads of NIST 610, NIST 612 and NIST 614 as external standard and ²⁹Si as internal standard. Data reduction was performed with Plasma Lab® software, by Thermo Scientific. The most crucial stage in multi-element analysis by LA-ICP-MS of silicate matrices like the ancient pottery is the sample preparation. We adopted the fusion technique procedure, which is one the best suited for plasma atomization (Papadopoulou *et al.* 2004). Glass pearls were prepared by melting at 1300°C for 1 hour a quota of 50 mg of the sample mixed with a ten-fold amount (500 mg) of Lithium Metaborate Puratronic in a Pt-Au-Rh crucible. This procedure induces the evaporation of some volatile element such as Rb. Its value cannot be quantified accurately and is therefore omitted in the final measures (Condie 2015). Resulting



















Obj. photo and ID. No.	Shape	Class	Obj. photo and ID. No.	Shape	Class
 100041N	Cup	Orange ware	 100034A	Dipper cup	Orange ware
 100034K	Cup	Orange ware	 100042D	Cup	Orange ware
 100050B	Juglet	Orange ware	 100041H	Cup	Grey ware
 100041M	Cup	Grey ware	 100041D	Cup	Grey ware
 100050A	Juglet	Grey ware <i>Sicilian import?</i>	 100061B	Cup <i>Sicilian import?</i>	Grey ware (foreign?)
 100061E	Cup <i>Sicilian import?</i>	Grey ware (foreign?)	 100061H	Cup <i>Sicilian import?</i>	Grey ware (foreign?)
 100061A	Cup	Grey ware (foreign?)	 100067	Bowl	Traditional <i>Bahrija</i> ware
 100031C	Dipper cup	Traditional <i>Bahrija</i> ware	 100033G	Dipper cup	Traditional <i>Bahrija</i> ware
 100094A	Bowl	Traditional <i>Bahrija</i> ware	 100033C	Dipper cup	Traditional <i>Bahrija</i> ware

Table 1. List of samples from Qlejgha tal-Bahrija with indication of shape and pottery class grouped according to ware types.




















Obj. photo and ID. No.	Shape	Class	Obj. photo and ID. No.	Shape	Class
 100040C	Cup	Borg in-Nadur reddish yellow fabric with dark red/black mottled slip	 100031G	Dipper cup	Borg in-Nadur reddish yellow fabric with dark red/black mottled slip
 100039A	Jar	Borg in-Nadur reddish yellow fabric with dark red/black mottled slip	 100051D	Strainer wall <i>Sicilian import?</i>	Painted/Dribbled ware
 100109A	Strainer wall <i>Sicilian import?</i>	Painted/Dribbled ware	 100109B	Wall <i>Sicilian import?</i>	Painted/Dribbled ware
 100085A	Jar	Orange-grey unslipped ware	 100087C	<i>Pithos</i>	Orange-grey unslipped ware
 100083B	Lid	Orange-grey unslipped ware	 100051B	Strainer	Orange-grey unslipped ware
 100051C	Strainer	Orange-grey unslipped ware	 100051A	Strainer	Orange-grey unslipped ware
 100088B	<i>Pithos</i>	Red-slipped coarse ware	 100087D	<i>Pithos</i>	Red-slipped coarse ware
 100088A	<i>Pithos</i>	Red-slipped coarse ware	 100088C	<i>Pithos</i>	Dark yellow coarse ware
 100088D	<i>Pithos</i>	Dark yellow coarse ware	 100084A	Jar	Cooking ware
 100006A	Terracotta item <i>Foreign import?</i>	-			

Table 1. Continued.

concentrations must be corrected for the pollution introduced by the crucibles and the melting agent. The use of lithium metaborate and Pt-Au-Rh crucibles hinders the definition of related elements as Li, K, B, Rh, Cs, Re, Os, Pt, Au and Hg. The correction is done by subtraction of the blank composition obtained in the crucible without the sample and measured in the same analytical conditions by LA-ICP-MS together with the unknown samples. All plotted values are normalized on the average composition of the upper continental crust (Rudnick and Gao 2003).

Principal Component (PCA) was performed using the SPSS 17.0 statistical package on chemical data. This approach helps the definition of the compositional groups and for the chemical comparison data of pottery and sediments.

4. Results

4.1 Petrography

The analysis of the thin sections allowed characterizing and classifying the samples into three fabrics based on the different nature of the temper added to the clays during the preparation of the paste ware. Two of them are characterized by temper's clasts pertaining to sedimentary rocks fragments, and one whose clasts show a temper deriving from intrusive magmatic (granitic) rocks fragments (Table 2 and Figure 1).

The classificatory system here adopted, is organized in Groups, linked to geological/lithological nature of the tempers (I=Intrusive, S=Sedimentary), and fabrics (labelled by numbers) according to a general criteria proposed for the Central Mediterranean prehistoric pottery (Levi *et al.* 2017).

Accordingly, we defined fabrics S1 and S2 characterized by the presence of calcareous clay, rich in microfossils and common micrite deriving from sedimentary rocks

compatible with the geological units present in the Maltese ground, such as Upper Coralline Limestone, Lower Coralline Limestone and Globigerina Limestone (Oil Exploration Directorate 1993). A markedly different fabric I1 is defined for pottery tempers rich in rock fragments deriving from granitic intrusions. This kind of lithology is not present in the local (on island) geology and sedimentary record.

S1. Fossiliferous, optically inactive groundmass

Coarse:fine:voids (c:f:v) 10:85:5 to 10:85:7

This fabric is characterized by a fine optically inactive calcareous groundmass, rich in foraminifera; the coarse fraction is weakly attested and is composed by only grog temper.

The voids are few to common; meso channels and vughs are also commonly attested and few macro vughs and planar channels, and very rare mega vughs characterize the microstructure. The voids sometimes have a long axis orientation parallel with the vessel margins and they are single-spaced. Some of the voids are infilled or partially infilled with secondary calcite.

The groundmass is generally homogeneous throughout the sections; the colour is dark brown in PPL and XPL. The micromass is optically slightly inactive, suggesting a fairly high firing temperature. The samples 100034A and 100041N have a reddish slip on the external margins and the sample 100034K is characterized by a double structure: one dark brown in PPL and XPL, the second dark red in PPL and XPL.

The inclusions appear to have a unimodal size distribution: they are moderately sorted with a random orientation and they are open-spaced.

The coarse fraction (1.2 mm to 0.2 mm) is commonly composed by grog, generally with subangular equant and elongated clasts (<1.2 mm).

Two types of grog were identified: the dark brown-black opaque, optically inactive, with no minerals visible inside; and the fossiliferous dark brown and black clasts, optically inactive, characterized by the presence of microfossils, mainly foraminifera.

Fabric	Dominant	Frequent	Common	Few	Very few	Rare	Very rare
	50-70%	30-50%	15-30%	5-15%	2-5%	0,5-2%	<0,5%
S1. Fossiliferous optically inactive groundmass	Microfossils		Grog	Calcimudstone (micrite)			
S2a. Grog in homogeneous fossiliferous groundmass	Microfossils	Grog		Calcimudstone (micrite)	Vegetable fiber	Opaque minerals	Spatic calcite, Monocrystalline quartz
S2b. Grog in inhomogeneous fossiliferous groundmass	Microfossils	Grog		Calcimudstone (micrite)		Monocrystal-line quartz	
I1. Granite	Granite	Quartz			Iron oxides		

Table 2. Composition of Bahrija pottery fabrics.

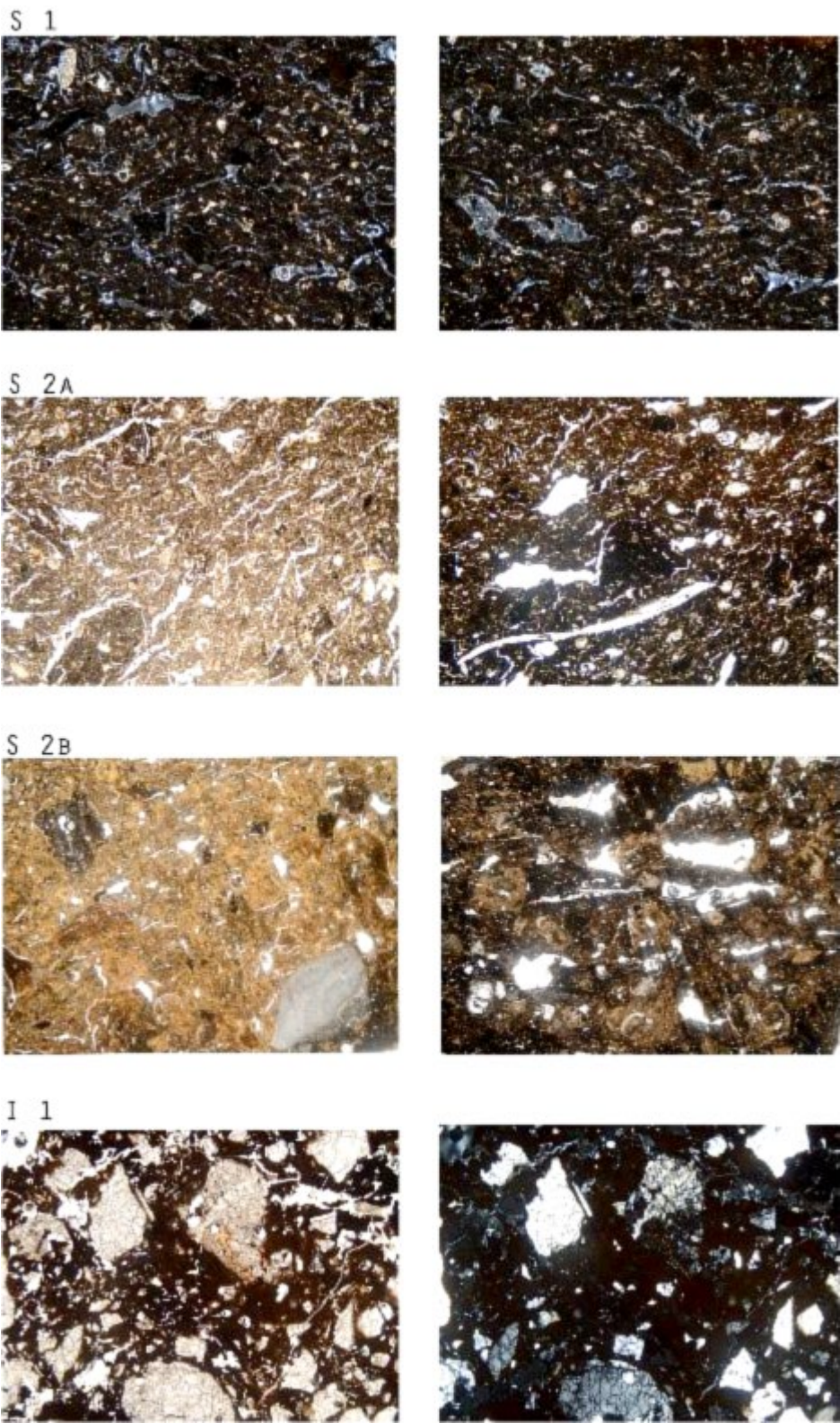


Figure 1. Petrographic classification of the fabrics, photo through polarizing microscope (PPL and XPL) (width image 5.5 mm). S1 Fossiliferous optically inactive groundmass, S2a Grog in homogeneous fossiliferous groundmass, S2b Grog in inhomogeneous fossiliferous groundmass, I1 Granite.

Micrite, with equant, subrounded clasts (<0.45 mm) and foraminifer fossils are weakly attested, while the fine fraction (<0.2 mm) is dominated by the microfossils, mainly foraminifers and the micrite is also commonly attested. The sample 100034K differs for the very few amount of microfossils, while the other properties

of the groundmass are compatible with the general characters of the fabric.

S2. Grog, fossiliferous groundmass

This fabric is characterized by a coarse fraction, composed mainly by grog, and a fossiliferous

groundmass; it is divided in two variants on the base of the matrix characteristics.

S2a. Grog in homogeneous fossiliferous groundmass
c:f:v 10:85:5 to 15:78:7

This variant is characterized by homogeneous calcareous clay, rich in foraminifera. The optical activity of the groundmass suggests a fairly low firing temperature.

In the microstructure are present common voids, frequent meso channels and vughs; also common macro vughs and planar channels, and common to few mega vughs are identifiable. The voids have mainly a long axis orientation parallel with the vessel margins and they are single-spaced to closed-spaced, most of them are infilled with secondary calcite.

The groundmass is generally homogeneous and well compacted throughout the sections, although some samples (10087C, 100085A, 100050A, 100051C, 100041M, 100051B) show variability in the micromass, specifically colour variations, sometimes associated with different crystallitic concentration.

The colour varies from yellowish and reddish brown to brown in PPL, and light brown to dark brown in XPL. The sample 100050B shows a sandwich structure with a wide reducing phase between two slim oxidising phases. Some samples show the presence of slip marks on the surfaces. The micromass is optically active and sometime the secondary calcite is spread through it.

The inclusions have a bimodal size distribution and are moderately sorted, with a random orientation and open-spaced.

The coarse fraction (1.5 mm to 0.3 mm) is characterized by the frequent presence of grog, with generally subangular equant and elongated clasts (<1.5 mm). Two types of grog are clearly identified, as attested in the previous fabric and in two samples 100085A and 100087C, the grog clasts have a max length of 3 mm.

Few micrite, with equant, subrounded clasts (<0.45 mm), and foraminifer fossils are also present.

In the samples 100031C, 100061H, 100084A, the micrite has a max length of ca. 1.2 mm, with microfossils and occasionally monocrySTALLINE quartz. Very few burnt vegetable fibers (<5.1 mm) and rare opaque minerals are visible in thin sections, and very rare spathic calcite, with angular equant clasts, is present only in the sample 100088B.

Foraminifer microfossils dominate the fine fraction (<0.3 mm) and micrite is also frequently attested. Commonly grog temper is also present and finally monocrySTALLINE quartz is rarely attested.

S2b. Grog in inhomogeneous fossiliferous groundmass
C:f:v 10:85:5 to 15:78:7

This variant is characterized by an inhomogeneous calcareous not well-packed groundmass.

The microstructures are few to common voids and frequent meso channels and vughs. Also, common

macro vughs and planar channels, common to few mega vughs are attested. The voids have mainly a long axis orientation parallel with the vessel margins and they are single-spaced to closed-spaced. Most of the voids are free from secondary calcite.

The groundmass is generally heterogeneous throughout the sections; the micromass evidences irregular distribution and seems to show that the ceramic paste would hardly melt during the preparation.

The micromass is optically active and the colour varies from yellowish and reddish brown to brown in PPL, and light brown to dark brown in XPL. The samples 100042D and 100088B show a sandwich structure with a reducing phase between two oxidising phases.

The inclusions have a bimodal size distribution; they are moderately to poorly sorted. They have random orientation and they are open-spaced.

The coarse fraction (3 mm to 0.3 mm) is characterized by the frequent presence of grog, generally with subangular equant and elongated clasts (<1.5 mm), two types of grog, as described in the previous fabric, are always present.

Foraminifera microfossils are commonly attested, and some species can be identified: globigerina, echinoderm spines, gastropods, and Discocyclina (<1.8 mm). Some of the microfossils have the body infilled by iron oxides. Finally, few micrite, with equant and subrounded clasts, are spread in the matrix (<0.9 mm).

Foraminifer fossils (mainly globigerina) dominate the fine fraction (<0.3 mm) and then micrite, grog and monocrySTALLINE quartz are attested with decreasing percentages.

11. Granite

c:f:v 25:68:7

Coarse and angular fragments of granitic rocks and quartz minerals, set in a glassy reddish groundmass, characterize this fabric, attested only in one sample, thus suggesting that the clay base is essentially high-fired.

The microstructures are mainly composed by voids; these comprise few meso vughs and common macro and mega vughs. The voids are not infilled with calcitic material, they have a random orientation and they are single-spaced.

The groundmass is homogeneous throughout the section; the colour is dark red in PPL and very dark red in XPL. The micromass is totally optically inactive and has a 'glassy' texture.

The inclusions have a bimodal grain-size distribution and are poorly sorted. They have a random orientation and they are closed-spaced.

The coarse fraction (4.2 mm to 0.3 mm) is dominated by granite rocks fragment, with equant and elongated, angular clasts, the most attested mineral is quartz, with equant and elongated, angular clasts (<3 mm). Finally, there are very few iron oxides, with equant subrounded clasts <0.35 mm.

The fine fraction (<0.3 mm) is mainly composed by quartz with equant and elongated, angular clasts and by iron oxides, with equant subrounded clasts.

4.2 Chemistry: XRF and LA-ICP-MS

Fabric classification based on petrography has been compared with chemical composition, based on major

and minor element variability (Tables 3, 4). Average and standard deviation of the local fabrics are reported in the table below (Table 5). To validate the data performed by XRF and LA-ICP-MS, we compare the concentrations of element analysed by both techniques. The plot (Figure 2) shows the TiO_2 wt% determined by XRF correlated with a high linearity with TiO_2 wt% determined by LA-ICP-MS measurements ($R^2 = 0.8987$)

Fabric	sample	SiO ₂	MgO	Al ₂ O ₃	Na ₂ O	P ₂ O ₅	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	LOI
S1. Fossiliferous optically inactive groundmass	100034A	43,79	3,45	17,78	0,52	0,27	1,57	13,06	0,89	0,04	7,49	11,17
	100034K	46,43	3,10	17,43	0,67	0,38	1,97	12,10	0,88	0,05	9,21	7,78
	100040C	47,83	3,22	18,95	0,76	0,32	2,32	14,64	0,93	0,05	8,38	2,61
	100041H	46,28	3,35	18,55	0,69	0,48	1,93	12,43	0,87	0,05	7,25	8,11
	100041N	45,71	3,07	18,13	0,76	0,42	2,01	13,21	0,88	0,05	7,43	8,33
	100061B	47,02	3,22	18,25	0,81	0,38	2,13	13,12	0,90	0,05	7,62	6,51
S2a. Grog in homogeneous fossiliferous groundmass	100031C	42,00	2,60	15,39	0,64	0,29	1,53	15,15	0,75	0,03	6,37	15,25
	100031G	43,92	2,81	16,35	0,65	0,45	1,45	12,02	0,78	0,04	7,20	14,34
	100039A	46,58	3,03	19,00	0,73	0,30	1,91	12,20	0,86	0,04	7,77	7,59
	100041M	42,09	2,63	15,95	0,71	0,20	1,59	15,39	0,80	0,04	6,94	13,66
	100050A	39,80	2,60	14,35	0,48	0,24	1,38	15,79	0,75	0,04	5,95	18,61
	100050B	44,45	2,70	16,64	0,57	0,32	1,65	15,92	0,92	0,05	7,42	9,39
	100051D	39,80	2,59	14,37	0,65	0,42	1,46	19,70	0,73	0,04	6,58	13,64
	100061E	48,06	2,46	18,03	0,71	0,30	2,07	8,93	0,93	0,04	7,52	10,95
	100061H	44,49	3,04	16,94	0,81	0,33	1,90	15,08	0,81	0,05	7,10	9,47
	100067	47,00	2,78	18,25	0,81	0,22	2,17	8,81	0,89	0,04	7,41	11,60
	100084A	37,45	2,49	13,68	0,25	0,19	1,22	15,57	0,68	0,05	6,09	22,33
	100085A	37,91	2,32	15,51	0,34	0,17	1,08	13,14	0,80	0,05	6,98	21,71
	100087C	37,58	2,38	13,67	0,45	0,30	1,30	18,40	0,73	0,05	6,10	19,04
	100088B	41,38	2,51	15,14	0,57	0,29	1,45	14,88	0,75	0,04	6,16	16,84
	100088D	35,01	2,38	12,68	0,27	0,33	1,05	18,04	0,67	0,05	5,59	23,93
	100094A	46,25	2,76	18,48	0,76	0,24	2,29	11,65	0,87	0,04	7,36	9,30
	100109A	43,95	2,61	17,31	0,54	0,35	1,62	15,21	0,86	0,04	6,84	10,68
	100033G	44,96	2,62	18,25	0,52	0,27	1,53	10,70	0,89	0,04	9,10	11,12
	100051B	41,40	2,47	16,12	0,61	0,26	1,54	14,49	0,79	0,03	6,76	15,53
	100051C	40,00	2,39	15,14	0,47	0,24	1,43	14,37	0,79	0,03	6,79	18,34
S2b. Grog in inhomogeneous fossiliferous groundmass	100042D	40,43	2,02	17,22	0,57	0,29	1,39	11,61	0,86	0,03	7,16	18,43
	100109B	36,73	2,43	13,71	0,42	0,30	1,32	17,68	0,74	0,04	6,42	20,21
	100033C	41,68	2,52	16,30	0,62	0,47	1,67	16,20	0,80	0,03	6,90	12,81
	100041D	44,60	2,79	16,94	0,71	0,29	1,68	12,71	0,81	0,03	6,59	12,84
	100051A	39,21	2,42	16,14	0,39	0,51	1,37	16,12	0,87	0,05	7,54	15,38
	100061A	34,95	1,82	13,48	0,32	0,26	1,15	21,06	0,75	0,03	6,54	19,64
	100083B	41,82	2,55	15,73	0,58	0,31	1,61	15,73	0,80	0,03	6,83	14,01
	100087D	33,31	2,42	12,02	0,29	0,39	0,87	20,97	0,69	0,05	6,16	22,87
	100088A	41,41	2,89	15,01	0,69	0,24	2,18	13,19	0,75	0,04	6,46	17,13
	100088C	43,71	2,54	16,64	0,53	0,28	1,45	10,55	0,83	0,04	6,89	16,53
I1. Granite	100006A	79,02	0,62	16,18	0,36	0,01	1,35	0,28	0,16	0,06	1,65	0,32

Table 3. Major elements (wt%) of Bahrija pottery measured by XRF Fluorescence.

Fabric	sample	Ni	Co	Cr	V	Ce	Nd	Ba	La	Zr	Y	Sr	Rb	Pb	Zn	Cu
S1. Fossiliferous optically inactive groundmass	100034A	87	23	234	219	157	37	348	79	262	34	693	95	26	180	93
	100034K	65	26	183	201	109	29	1025	45	220	30	590	119	72	162	192
	100040C	62	11	186	270	149	31	274	42	245	28	683	111	21	142	90
	100041H	43	16	169	189	89	31	253	46	203	23	614	97	udl	129	99
	100041N	61	11	201	206	113	33	404	52	225	30	641	105	udl	149	91
	100061B	44	13	165	170	68	33	306	46	182	18	589	87	udl	115	107
S2a. Grog in homogeneous fossiliferous groundmass	100031C	55	15	151	132	86	30	388	38	246	25	745	95	udl	124	111
	100031G	62	14	185	167	78	35	391	51	184	21	717	100	26	149	89
	100039A	56	14	179	197	132	33	281	45	225	35	560	129	26	165	66
	100041M	65	10	206	162	97	34	390	50	188	22	672	82	21	156	130
	100050A	58	16	178	155	124	28	347	51	242	30	981	105	54	161	98
	100050B	65	17	199	180	132	34	339	49	269	34	715	86	udl	144	104
	100051D	56	17	190	132	132	33	329	54	222	24	747	76	udl	126	145
	100061E	55	13	187	217	113	32	374	53	259	35	509	121	96	137	102
	100061H	56	15	173	185	95	30	348	54	240	31	711	125	udl	164	98
	100067*	201	48	198	110	76	36	303	49	146	23	297	1	2184	128	256
	100084A	49	19	159	128	126	28	362	40	171	udl	402	65	udl	92	130
	100085A	45	20	124	121	118	30	329	43	210	22	370	89	22	104	111
	100087C	70	18	202	180	145	41	332	60	228	29	771	112	udl	151	120
	100088B	55	13	182	151	109	28	358	61	223	27	871	107	27	140	110
	100088D	57	13	170	136	96	25	428	48	221	28	818	88	20	145	114
	100094A	48	16	145	193	121	28	311	46	166	20	467	99	udl	130	93
	100109A	54	20	182	183	119	36	321	43	221	32	639	91	27	158	109
	100033G*	63	14	151	121	78	36	216	53	163	24	320	7	34	99	59
	100051B*	47	12	128	101	71	34	234	46	162	24	363	8	33	87	92
	100051C*	81	12	253	92	64	31	264	49	164	23	355	1	216	155	185
S2b. Grog in inhomogeneous fossiliferous groundmass	100042D*	43	11	137	105	72	33	261	47	148	22	297	6	31	70	93
	100109B*	46	15	112	86	59	29	232	41	137	20	311	1	849	227	191
	100033C	69	19	201	158	134	30	356	50	245	25	717	103	udl	180	166
	100041D	47	16	164	152	102	37	283	63	171	21	640	99	95	135	108
	100051A	67	14	201	162	123	34	414	56	270	34	715	83	udl	157	117
	100061A	38	10	145	130	114	34	368	50	205	21	597	70	udl	108	159
	100083B	49	udl	161	142	86	30	310	50	202	27	744	78	udl	109	94
	100087D	67	12	175	137	155	29	381	51	219	23	1012	71	udl	135	135
	100088A	55	15	169	174	118	32	318	48	232	29	574	104	udl	117	75
	100088C	64	17	197	177	140	33	385	55	265	32	595	105	udl	162	76
I1. Granite	100006A	udl	udl	udl	19	udl	21	36	udl	59	udl	udl	359	106	45	16

Table 4. Minor and trace elements (ppm) of Bahrija pottery measured by XRF Fluorescence and LA-ICP-MS (with asterisk).

According to the major elements, the fabric S1 is characterised by a higher content of SiO_2 , MgO , Al_2O_3 , Fe_2O_3 and lower CaO content. Minor and trace elements reveal weak differences between the fabrics S1 and S2 that can be explained in the reduced compositional range of local raw materials. The Granite fabric is slightly distinguishable for the SiO_2 content, which is

extremely high in comparison with the other samples; by contrast the MgO , CaO and Fe_2O_3 contents are the lowest of the whole dataset. Concerning the minor and trace elements, the fabric appears extremely depleted with most elements below the detection limit and the lowest contents in V, Ba, Zr, Zn, Cu have, on the contrary, a very high Rb content. This concentration

Fabric		SiO ₂	MgO	Al ₂ O ₃	Na ₂ O	P ₂ O ₅	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃
S1. Fossiliferous optically inactive groundmass	mean	46,2	3,2	18,2	0,7	0,4	2,0	13,1	0,9	0,0	7,9
	st.dev	1,4	0,1	0,5	0,1	0,1	0,2	0,9	0,0	0,0	0,8
S2a. Grog in homogeneous fossiliferous groundmass	mean	42,2	2,6	16,1	0,6	0,3	1,6	14,3	0,8	0,0	6,9
	st.dev	3,6	0,2	1,8	0,2	0,1	0,3	2,9	0,1	0,0	0,8
S2b. Grog in inhomogeneous fossiliferous groundmass	mean	39,8	2,4	15,3	0,5	0,3	1,5	15,6	0,8	0,0	6,7
	st.dev	3,7	0,3	1,7	0,1	0,1	0,4	3,6	0,1	0,0	0,4

Fabric		Ni	Co	Cr	V	Ce	Nd	Ba	La	Zr	Y	Sr	Zn	Cu
S1. Fossiliferous optically inactive	mean	60	17	190	209	114	32	435	52	223	27	635	146	112
	st.dev	15	6	23	31	31	2	268	13	26	5	41	21	36
S2a. Grog in homogeneous fossiliferous	mean	65	17	177	152	108	32	332	49	221	27	623	136	116
	st.dev	32	8	29	34	20	4	52	6	33	5	176	24	41
S2b. Grog in inhomogeneous fossiliferous	mean	55	14	166	142	113	32	331	51	225	25	646	140	121
	st.dev	11	3	28	28	25	3	57	6	29	5	160	42	38

Table 5. Mean and standard deviation of major, minor and trace elements of the Bahrija fabric groups.

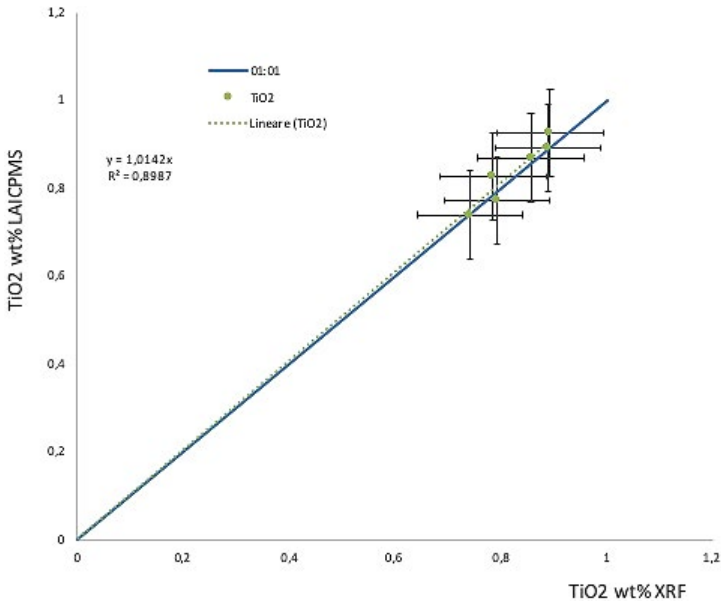


Figure 2. Comparison between TiO₂ wt% measured in Bahrija pottery by XRF and LA-ICP-MS.

should be also affected by enrichment, Rb is one of the most susceptible alkali metals for the post-depositional alteration (Hunt 2017).

The composition of the six samples analysed by LA-ICP-MS (all belonging to the fabric S2) is reported in the table below (Table 6). Element concentrations are plotted in order of incompatibility in Figure 2a. This order reflects the geochemical behaviour of the elements showing their tendency to form the rocks of the continental crust starting from their basic constituent represented by the primary magmatism.

Two subsets of elements: the Rare Earth Elements (REE) and transition metals (Ti, V, Cr, Mn, Co, Ni, Cu, Zn) are plotted in Figure 2b and Figure 2c respectively. Less important negative anomalies are represented by a light depletion in Ba, followed by another in Zr and Hf (Figure 2a).

Looking to the REE subset (Figure 2b), it is noticeable that light REE (LREE from La to Sm) tend to be more enriched than heavy ones (HREE: from Dy to Lu). A sinusoidal trend that enriches selectively adjacent elements is, however, clear.

The transition metals (Figure 2c) present a complex pattern with prominent Mn, Co, Ni depletion and Cu enrichment with respect to the almost non-fractionated Ti and V contents. The scatter of the

measured samples increases however from left to right in the chosen element order.

5. Discussion

Compositional analyses of our samples allowed the identification of two local fabrics, S1 and S2, and an imported specimen.

Considering the relationship between shape/function and fabrics in the present dataset the finer fabric S1 is only used for cups whilst the grog fabric was used for all

sample	Fabric	P	K	Ti	V	Cr	Mn	Co	Ni	Cu	Zn	Sr	Y	Zr	Nb	Cs	Ba	La
100033G	S2a. Grog in homogeneous fossiliferous groundmass	0,51	0,16	1,17	1,22	1,41	0,22	0,79	1,11	1,49	1,39	1,00	1,16	0,84	1,60	0,52	0,35	1,69
100051B		0,55	0,17	1,05	1,02	1,17	0,20	0,67	0,76	2,65	1,21	1,14	1,15	0,84	1,38	0,64	0,37	1,47
100051C		0,61	0,06	0,96	0,93	2,52	0,23	0,68	1,48	6,01	2,22	1,11	1,07	0,85	1,28	0,62	0,42	1,55
100067		0,50	0,06	1,14	1,12	1,92	0,25	2,77	4,03	8,52	1,82	0,93	1,10	0,76	1,42	0,86	0,49	1,57
100042D	S2b. Grog in inhomogeneous fossiliferous groundmass	0,61	0,15	1,08	1,06	1,27	0,18	0,62	0,69	2,70	0,96	0,93	1,03	0,77	1,42	0,73	0,42	1,49
100109B		0,44	0,04	0,91	0,86	0,99	0,17	0,81	0,75	6,22	3,30	0,97	0,98	0,71	1,20	0,65	0,37	1,30

sample	Fabric	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Th	U
100033G	S2a. Grog in homogeneous fossiliferous groundmass	1,24	1,18	1,34	1,52	1,42	1,40	1,17	1,17	1,15	1,14	1,40	1,24	1,11	0,82	1,39	1,05	1,06	0,94
100051B		1,13	1,09	1,27	1,46	1,33	1,32	1,13	1,13	1,15	1,03	1,36	1,27	1,12	0,81	1,38	0,81	1,07	0,79
100051C		1,01	0,98	1,14	1,35	1,21	1,19	0,94	1,01	0,97	1,00	1,19	1,07	1,12	0,84	1,26	21,20	0,94	0,82
100067		1,20	1,14	1,32	1,67	1,51	1,29	1,01	1,18	1,04	1,10	1,28	1,29	1,13	0,79	1,22	0,93	1,14	0,94
100042D	S2b. Grog in inhomogeneous fossiliferous groundmass	1,14	1,05	1,23	1,24	1,32	1,12	1,01	1,11	1,05	1,02	1,11	0,97	1,13	0,75	1,30	0,75	0,97	0,79
100109B		0,94	0,90	1,06	1,23	1,17	1,13	0,93	0,96	0,98	0,97	1,30	0,91	0,91	0,75	1,10	15,07	0,92	0,75

Table 6. Major, minor and trace elements (ppm) of the samples measured by LA-ICP-MS (100033G, 100051B, 100051C, 100067, 100042D, 100109B).

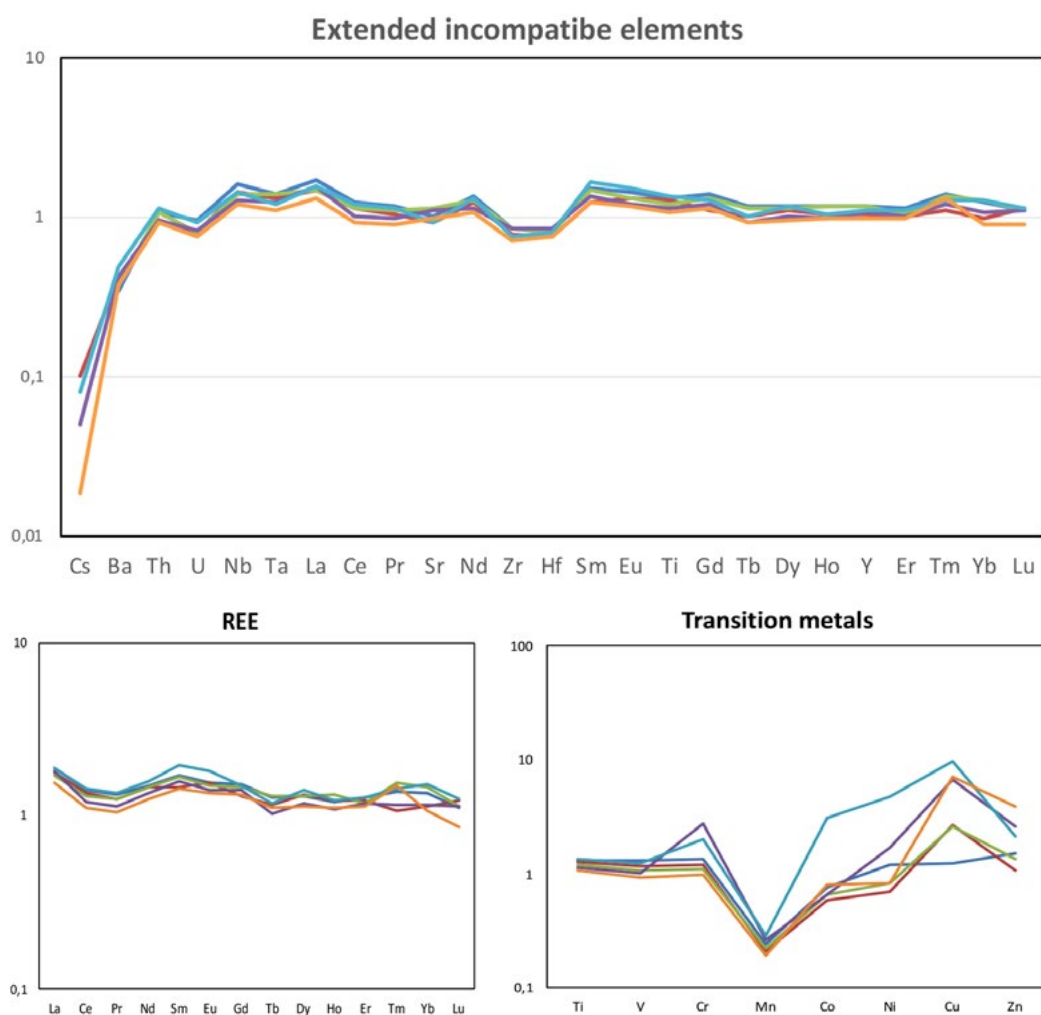


Figure 3. Major, minor and trace elements of the six samples measured by LA-ICP-MS: composition of incompatible elements (a), composition of REE elements (b), composition of transition elements (c).

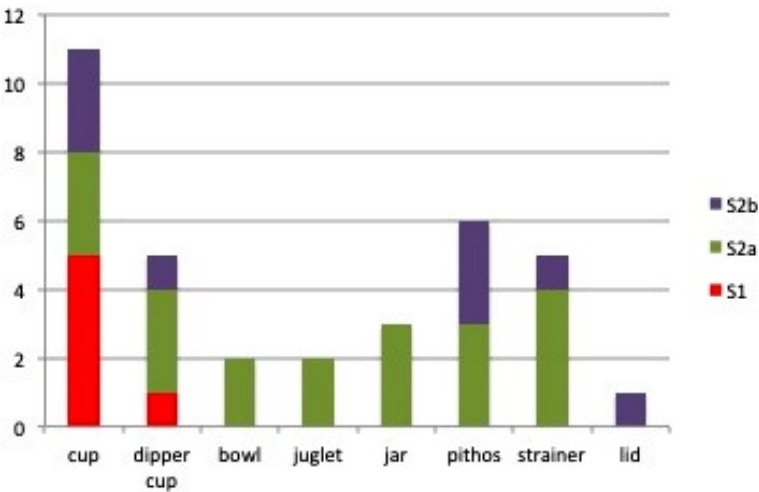


Figure 4. Relationship between shape/function and fabrics.

the shapes with a prevalence of the inhomogeneous one S2b for the larger, and possibly coarser, *pithoi* (Figure 4).

About the grey wares (100061B, 100050A, 100061E, 100061H), that showing typical features of Sicilian Middle Bronze pottery production they are all characterized by S2a fabric, except for 100061B (S1). The two examples of strainer spouted jars in painted ware (100051D, 100109A) are both classified as S2a fabric and the undecorated one (100109B) is the only defined in S2b fabric. Overall the shapes traditionally considered as Sicilian imports (Vella *et al.* 2010) are locally produced and the only imported sample is a loom weight.

This result is coherent with other studies of Bronze Age pottery from Malta (Barone *et al.* 2015, Jones *et al.* 2014) outlining the scarcity of imported vessels compared with other insular environments in the Mediterranean, for example the Aeolian Islands (Williams 1980, 1991; Levi, Jones 2005; Levi, Fragnoli 2010; Jones *et al.* 2014; Levi *et al.* 2019).

In general, the Bronze Age pottery from Malta shows a relative homogeneity in its local production with the use of fossiliferous clay tempered with grog and/or calcite. Despite that, the groundmass is sometimes inhomogeneous, suggesting clay mixing

during the paste preparation. The correspondences between the present study and other ones (Barone *et al.* 2015, Jones *et al.* 2014) proposed in the table below (Table 7). In particular, fabric S2 is coherent with Borġ in-Nadur Barone’s fabric A (coarse grog and fine quartz inclusions, groundmass with abundant fossil, high-medium birefringence) and with some samples belonging to the same ware found at Ognina and Cannatello (Sicily) but produced at Malta.

fabric S3 ‘Grog and spathic calcite’ Fabric S3 is not attested in the present study but has been

identified by Barone (fabric B: abundant grog, spathic calcite, fine quartz inclusions, and fossiliferous groundmass with high birefringence) and in another prehistoric data set from Tas-Silġ under investigation by our team (courtesy of Aberto Cazzella and Giulia Recchia). Local production with fossiliferous Blue clays has been also suggested for Roman amphoras (Bruno, Capelli 2000).

Other considerations arise by comparing the chemical data of pottery and local clays, in particular Blue clays from Ġnejna Bay (Barone *et al.* 2015), The vessel distribution shows a linear trend in the SiO₂/CaO vs Al₂O₃/CaO diagram (Figure 5.a) and a parabolic trend in the SiO₂/MgO vs Al₂O₃/CaO diagram (Figure 5.b). These relationships suggest variable addition of clay sediments used as raw materials in terms of relative proportion of clay and silt/sand fractions. In fact, the fabric’s groups are distributed along the trends, with the clay specimens falling at their tip.

Plotting also the fabrics from Borġ in-Nadur settlement (Barone *et al.* 2015), the compositional field of samples from Baħrija and Borġ in-Nadur shows two parallel linear trend in the SiO₂/CaO vs Al₂O₃/CaO diagram (Figure 6a), with the clay specimens falling at their tip. In the SiO₂/MgO vs Al₂O₃/CaO diagram (Figure 6b), the Baħrija fabrics distribution differs from the Borġ in-Nadur one, suggesting a depletion in CaO and

	Baħrija (this study)	Borġ in-Nadur (Barone <i>et al.</i> 2015)	Cannatello and Ognina Borġ in-Nadur (Malta origin) (Barone <i>et al.</i> 2015)	Cannatello Borġ in-Nadur (Malta) (Jones <i>et al.</i> 2014)
S1. Fossiliferous optically inactive groundmass	X			
S2. Grog in fossiliferous groundmass	X	Fabric A	Fabric A	X
S3. Grog and spatic calcite		Fabric B		

Table 7. Comparison of the fabrics in the present study and other sets of samples.

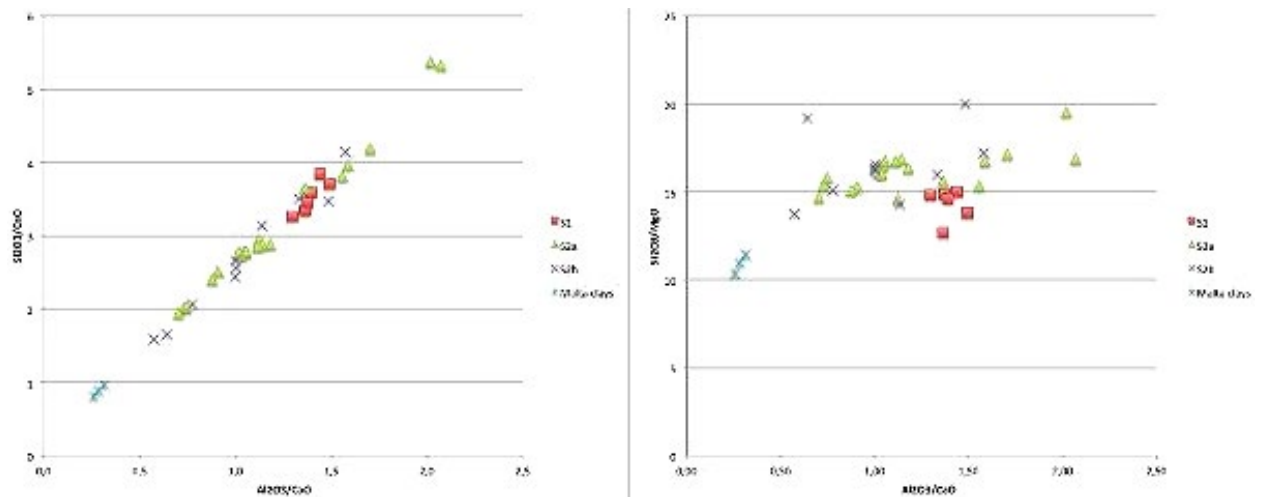


Figure 5. Binary diagrams of the fabrics and Malta clays (Barone *et al.* 2015): SiO₂/CaO vs Al₂O₃/CaO (a) and of SiO₂/MgO vs Al₂O₃/CaO (b).

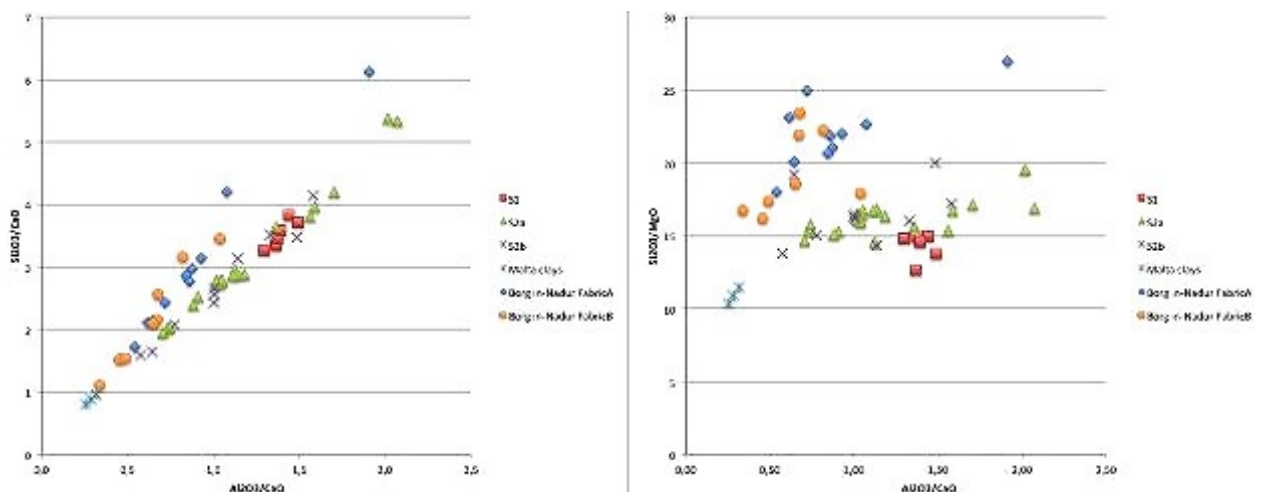


Figure 6. Binary diagrams of this set of samples, and the dataset from Barone *et al.* (2015): SiO₂/CaO vs Al₂O₃/CaO (a) and of SiO₂/MgO vs Al₂O₃/CaO (b).

an enrichment in MgO of the Bahrija samples. This distribution should be explained with the presence of the fabric S3 (Grog and spathic calcite) in Borg in-Nadur dataset and with the use of different local raw materials.

Mixing of different clays is attested by the compositional (trends) and petrographic properties of the groundmass. These observations may suggest an attempt of remedying the scarce properties of the raw materials by adding correctional components during the mixing of the paste.

The Principal component analysis (Figure 7), based on major and minor elements, grouped the fabrics of

Qlejgha tal-Bahrija and Borg in-Nadur sites (Barone *et al.* 2015). Also the Borg in-Nadur type pottery recovered from Middle Bronze Age archaeological contexts in Ognina (SR) and in Cannatello (SG) (Raneri *et al.* 2015) was included because they are considered imports from Malta.

The PCA plot shows some compositional differences between Bahrija and Borg in-Nadur fabrics (A and B) compatible with the variability of local raw materials and with use of different temper (spathic calcite) in the case of fabric B (S3). The overlapping of Maltese imported vessels recovered in Ognina and Cannatello with the local fabrics from Bahrija and Borg in-Nadur confirmed their provenance from Malta.

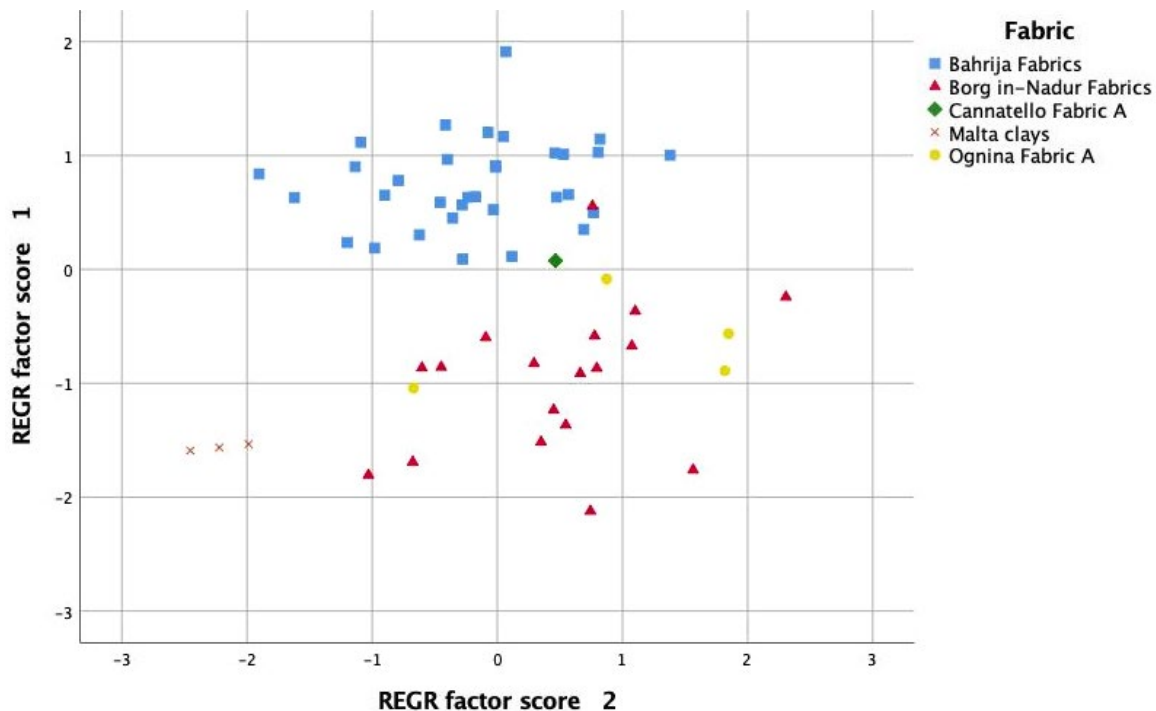


Figure 7. Principal Component Analyses (PCA) based on major and minor elements of fabrics from Qlejgha tal-Bahrija, Borg in-Nadur (Barone *et al.* 2015), Borg in-Nadur type pottery from Ognina and Cannatello (Barone *et al.* 2015) and Malta Blue clays (Barone *et al.* 2015). Factor 1 (45.3%) +Zr,+Cr, -CaO, -K₂O. Factor 2 (17.5%) +TiO₂, +Si₂O₃, -CaO, -Sr.

The combined petrographic and chemical analysis of the Bahrija pottery has revealed a compositional assemblage with a range of different local fabrics and only one off-island artefact. In terms of local production, the Bahrija fabrics differ from the Borg in-Nadur ones, as the detailed compositional investigation presented here has demonstrated.

6. Conclusions

This first archaeometric study of Bahrija pottery has provided significant new data on the debate about the end of prehistory in the Maltese archipelago. This study has once again proved how tricky it can be to try classifying ceramic fabrics purely on the basis of direct examination and has also disproved some traditional assumptions.

To have proved that the examples of grey ware showing typical features of Sicilian Middle Bronze pottery production (100061B, 100050A, 100061E, 100061H), the two examples of strainer spouted jars (100051D, 100109A) and the wall fragmented of painted ware (100109B) are local productions have debunked their traditional interpretation as Sicilian imports and it demonstrates that the relationship between Sicily and Malta at the end of the 2nd millennium BC was tighter and more complicated than was previously thought (Tanasi 2011b; 2015b). In fact the samples in questions have truly stylistic and technological features typical

of the Middle and Late Bronze Age Sicilian repertoires, which means that they were either produced in Malta by Sicilian potters or crafted by Maltese potters who had direct knowledge of the Sicilian pottery. This discovery forces us to rethink the entire relationship between the two indigenous communities and to put aside the traditional idea that Malta acted as just a passive player in the dynamics of acculturation (Evans 1971).

With respect to the attempt to interpret the apparent break with the Borg in-Nadur pottery production tradition that the Bahrija pottery appeared to be, analyses have demonstrated the existence of a new petrographic fabric (S1. Fossiliferous optically inactive groundmass), which was not found during other archaeometric studies on Borg in-Nadur ceramics analysed at Borg in-Nadur temple and in two sites in Sicily (Raneri *et al.* 2015). This new data reinforce the hypothesis of a break with traditional production practices, which is not just a change in shapes and style of the pottery, but is a technological change that can very likely be connected with the different potting practices of the newcomers. The absence of the other traditional fabric (Grog and spathic calcite) attested at Borg in-Nadur temple is another indicator of such technological change. However, the continuation in the use of the traditional fabric (S2. Grog in fossiliferous groundmass) along with the new one, testifies to a gradual amalgamation between new and old cultural habits rather than an abrupt break.

A whole new scenario has been ultimately opened by the identification of the unusual fabric with granitic rocks and quartz minerals on the terracotta item, possibly a weight (100006A, see chapter 4, Figure 17a). In fact, it is now an undoubted external import which, however, cannot be traced back to Sicily, the closest geographic region with a history of close relations. Unfortunately, since it was found during the excavations carried out by Peet in 1910, the information about its context of provenance are very limited. However, it is important to highlight that all the materials retrieved during both excavations of Peet (1910) and Trump (1961) belong the Late Borġ in-Nadur/Bahrija period, without any finding attributable to earlier or later phases. At this stage and with the limited comparative data available, it is just possible to suggest that it could have been introduced in Malta from other areas with which the island was in contact in that period, such as the North African coast. Future researches and more in-depth analyses at Qlejgha tal-Bahrija, currently ongoing, will certainly shed more light on such potentially very impactful discovery.

References

- Bonanno, A. 2017. From Prehistoric to Historic Malta: a Discussion of the Sources, in Mizzi, D., Vella, N. C., Zammit, M. R., Frendo, A. J. (eds), 'What mean these stones?' (Joshua 4:6, 21): essays on texts, philology, and archaeology in honour of Anthony J. Frendo. Leuven: Peeters, pp. 243-254.
- Barone, G., Mazzoleni, P., Raneri, S., Tanasi, D., Giuffrida, A. 2015. Archaeometric characterization of Middle Bronze Age pottery from the settlement at Borġ in-Nadur, in Tanasi, D. and Vella, N. C. (eds), *The Late Prehistory of Malta: Essays on Borġ in-Nadur and other sites*, Archaeopress, Oxford, pp. 99-112.
- Brunelli, D., Levi, S. T., Fragnoli, P., Renzulli, A., Santi, P., Paganelli, E., Martinelli, M. C. 2013. Bronze Age pottery from the Aeolian Islands: definition of Temper Compositional Reference Units by an integrated mineralogical and microchemical approach, *Applied Physics*, 113, pp. 855-863.
- Bruno, B., Capelli, C. 2000. Nuovi tipi di anfore a Malta, in D'Amico, C. Tampellini (eds), *6a Giornata Le Scienze della terra e l'archeometria* Este 1999, Este, pp. 59-65.
- Chunshu, W., Mingcai, Y., Wenhua, Z., Qinghua, C., Tiexin, G. 1996. Chinese synthetic silicate and limestone certified reference materials for spectral analysis, *Geostandard Newsletter* 20, pp. 57-64.
- Condie, K. C. 2015. *Plate Tectonics and Crustal Evolution*, Elsevier, Amsterdam, pp. 16-17.
- Evans, J. D. 1953. The Prehistoric Culture-Sequence in the Maltese Archipelago, *Proceedings of Prehistoric Society* 19, pp. 41-94.
- Evans, J. D. 1971. *The Prehistoric Antiquities of the Maltese Islands. A Survey*. London: The Athlone Press.
- Gazzulla Barreda, M. F., Rodrigo Edo, M., Orduña Cordero, M., Ventura Vaquer, M. J. 2016. Determination of minor and trace elements in geological materials used as raw ceramic materials, *Boletín de la Sociedad Española de cerámica y vidrio* 55, pp. 185-196.
- Jones, R., Levi, S. T., Bettelli, M., Vagnetti, L. 2014. *Italo-Mycenaean Pottery, The Archaeological and Archaeometric Dimensions*, Incunabula Graeca CIII, CNR-Istituto di Studi sul Mediterraneo antico, Rome, pp. 229-233.
- Hunt, A. M. W. 2017. *The Oxford Handbook of Archaeological Ceramic Analysis*, Oxford University press, pp.48-57.
- Levi, S. T., Cannavò, V., Brunelli, D. 2019. *Atlas of Ceramic Fabrics 2. Italy: Southern Tyrrhenian – Neolithic-Bronze Age*, Oxford, Archaeopress.
- Levi, S. T., Bettelli, M., Cannavò, V., Di Renzoni, A., Ferranti, F., Martinelli, M. C., Ollà, A., Tigano, D. 2017. Stromboli: gateway for the Mycenaean early connections through the Messina's Strait, in Fotidias, M., Laffineur, R., Lolos, Y., Vlachopoulos, A. (eds) *HESPEROS. The Aegean seen from the West. 16th International Aegean Conference*, Aegaeum, Annales liégeoises d'archéologie égéenne, Ionnina, pp. 147-154.
- Levi, S. T., Fragnoli, P. 2010. Le analisi archeometriche delle ceramiche. In Martinelli, M. C. (ed.) *Archeologia delle Isole Eolie. Il villaggio dell'età del Bronzo Medio di Portella a Salina. Ricerche 2006 e 2008*. Rebus Muggio (MB), pp. 219-232.
- Levi, S. T., Jones, R. E. 2005. Analisi archeometrica delle ceramiche. In M. C. Martinelli (ed.), *Il villaggio dell'età del Bronzo medio di Portella a Salina nelle Isole Eolie, Origines*, Firenze, pp. 241-262.
- Malta. Oil Exploration Directorate 1993. *Geological map of the Maltese islands: 1:25,000*, Valletta, Malta: Oil Exploration Directorate.
- Papadopoulou, D. N., Zachariadis, G. A., Anthemidis, A. N., Tsirliganis, N. C., Stratis, J. A. 2004. Microwave-assisted versus conventional decomposition procedures applied to a ceramic potsherd standard reference material by inductively coupled plasma atomic emission spectrometry, *Analytica Chimica Acta* 505, pp. 173-181.
- Peet, T. E. 1910. Contributions to the study of the Prehistoric Period in Malta, in *Papers of the British School at Rome* V, 1910, pp. 141-163.
- Quinn, P. S. 2013. *Ceramic Petrography: The Interpretation of Archaeological Pottery & Related Artefacts in Thin Section*. Archaeopress, Oxford.
- Raneri, S., Barone, G., Mazzoleni, P., Tanasi, D., Costa, E. 2015. Mobility of men versus mobility of goods: archaeometric characterization of Middle Bronze Age pottery in Malta and Sicily (15th-13th century BC), *Periodico di Mineralogia* 84.1, pp. 23-44.
- Rudnick, R. L., Gao, S. 2003. Composition of the Continental Crust, in Heinrich Holland D., Turekian,

- K. K. (eds) *Treatise on Geochemistry* 3. Elsevier, Amsterdam, pp. 1-64.
- Sagona, C. 2008. Malta: Between and rock and a hard place, in *Beyond the Homeland: Markers in Phoenician Chronology*, ed. C. Sagona. (Ancient Near Eastern Studies Supplement 28). Louvain: Peeters, pp. 487-536.
- Sagona, C. 2011. Observations on the Late Bronze Age and Phoenician-Punic pottery in Malta, in *Ceramics of the Phoenician-Punic World: Collected Essays*, ed. C. Sagona. (Ancient Near Eastern Studies Supplement 36). Louvain: Peeters, pp. 397-432.
- Tanasi, D. 2011a. The Prehistoric Pottery. In Tanasi, D., Vella, N. C. (eds), *Site, Artefacts, Landscape: Prehistoric Borġ in-Nadur, Malta*, Praehistorica Mediterranea 3. Polimetrica Monza, pp. 71-158.
- Tanasi, D. 2011b. Living and dying in a foreign country. Maltese immigrants in Middle Bronze Age Sicily, in Tanasi, D., Vella, N. C. (eds), *Site, Artefacts, Landscape: Prehistoric Borġ in-Nadur, Malta*, Monza: Polimetrica, pp. 283-337.
- Tanasi, D. 2015a. The pottery from the excavation campaign of David H. Trump (1959) at the settlement of Borġ in-Nadur, in D. Tanasi, N. C. Vella (eds), *The late prehistory of Malta: essays on Borġ in-Nadur and other sites*, Oxford: Archaeopress, pp. 35-98.
- Tanasi, D. 2015b. Borġ in-Nadur pottery abroad: a report from the Sicilian necropoleis of Thapsos and Matrensa, in Tanasi, D., Vella, N. C. (eds), *The late prehistory of Malta: essays on Borġ in-Nadur and other sites*, Oxford: Archaeopress, pp. 173-784.
- Tanasi, D. 2018. Taking Maltese prehistory out of the box. Towards a definition of Borġ in-Nadur archaeological facies, in Vella, N. C., Frendo, A. J., Vella, H. C. R. (eds), *Lure of the antique: essays on Malta and the Mediterranean in honour of Anthony Bonanno*, Leuven, Peeters Publishers, pp. 183-197.
- Trump, D. H. 1961. The Later Prehistory of Malta, *Proceedings of the Prehistoric Society* 27, pp. 253-262.
- Tusa, S. 1992. Le fasi formative della cultura elima alla luce di recenti rinvenimenti, in AA.VV., *Giornate Internazionali di Studi sull'Area Elima*, Gibellina 19-22 Settembre 1991, Pisa-Gibellina, pp. 603-615.
- Vella, N. C. 2005. Phoenician and Punic Malta, *Journal of Roman Archaeology* 18, pp. 436-450.
- Vella, N. C., Tanasi, D., Anastasi, M. 2011. Mobility and transitions: the south central Mediterranean on the eve of history, in Tanasi, D., Vella, N. C. (eds), *Site, Artefacts, Landscape: Prehistoric Borġ in-Nadur, Malta*, Monza: Polimetrica, pp. 251-282.
- Williams, J. L. 1980. A Petrological Examination of the Prehistoric Pottery from the Excavations in the Castello and Diana Plain of Lipari – An Interim Report. In Bernabò Brea, L., Cavalier, M. (eds), *Meligunis Lipára IV*, Palermo, pp. 847-868.
- Williams, J. L. 1991. The Petrographic Analysis of Capo Graziano Pottery from Filicudi and Milazzese Pottery from Panarea. In Bernabò Brea, L., Cavalier, M. (eds), *Meligunis Lipára VI*, Palermo, pp. 239-259.
- Whitbread, I. K. 1989. A proposal for the systematic description of thin sections towards the study of ancient ceramic technology. In Maniatis, Y. (ed.), *Archaeometry: Proceedings of the 25th International Symposium*, Elsevier, Amsterdam, pp. 127-138.

Chapter 9.

New data on the absolute chronology of the Maltese Middle/Late Bronze Age

Davide Tanasi, Robert H. Tykot

1. Introduction

In the traditional sequence of Maltese prehistory, there is no placeholder for the Iron Age. There is instead an eight-century long Middle/Late Bronze Age (ca. 1500–750 BC) represented by the Borġ in-Nadur culture which in part *de facto* includes also the Maltese Iron Age. In the absence of substantial cultural changes, a progressive series of five pottery styles provides an internal chronological structure for this culture, which is not yet supported by absolute dates: Early, Classic and Late Borġ in-Nadur (EBN, CBN, LBN), Painted Ware, and Baħrija, whereas the Painted Ware and Baħrija styles partially overlap with the LBN style, elements of which linger until the eighth c. BC (Tanasi 2018).

The chronology of the internal sequence of the Borġ in-Nadur pottery production and the definition of the temporal extent of the Baħrija pottery production are two major issues in the research on the prehistory of the Archipelago on which several scholars have debated. The absence of radiocarbon data from guide sites as Borġ in-Nadur and Qlejgha tal-Baħrija has left specialists arguing on pottery typology based on cross-dating with the also are no Sicilian cultures, for which, there are not absolute dates (Cazzella – Recchia 2008, pp. 381–389; Tanasi 2015, pp. 89–95). Such approach has also been supported by the rare but significant occurrence of artefacts highly suspected of being of Sicilian type in Maltese contexts, such as the examples of strainer spouted jugs from Qlejgha tal-Baħrija (Vella *et al.* 2011) and the double spiral bronze fibula found at Tas-Silġ South (Recchia – Cazzella 2012).

2. Materials and Methods

In the frame of a long term research project aimed at reappraising the results of the excavations carried in the major Maltese Middle/Late Bronze Age sites (Borġ in-Nadur temple: Tanasi – Vella 2011; Borġ in-Nadur settlement: Tanasi – Vella 2015; Għar Mirdum: Tanasi 2014; In-Nuffara: Tanasi 2013) and redefining the sequence of pottery production, animal bone samples from the D. H. Trump's 1959 excavation at settlement at Borġ in-Nadur and from the D. H. Trump's 1959

excavations at Qlejgha tal-Baħrija have been submitted for radiocarbon dating.

Two samples were selected namely from trench N/layer 8 and trench H/layer 2 from Borġ in-Nadur settlement (Tanasi 2015) (Figure 1) and one from the trench D, Layer 5 of Trump's excavation at Qlejgha tal-Baħrija (Figure 2, see chapter 3, Figure 87a) (Table 1).

With respect to the samples from Borġ in-Nadur settlement, as clearly explained elsewhere (Tanasi 2015, p. 89), layer 8 of trench N was a pure Tarxien Cemetery stratum, while layer 2 of trench H, recognized as equal to layer 4 of trench O and layer 5 of trench P and corresponding to the level of use of the floor level of Hut 2, was assigned to a terminal stage of the Late Borġ in-Nadur phase at the transition with the subsequent period characterized by the full emergence of the typical Baħrija pottery. Regarding the sample from Qlejgha tal-Baħrija, it comes from a context related to a second phase of occupation of the site, characterized at the stratigraphic level by a mixture of Late Borġ in-Nadur and Baħrija pottery (see chapters 1 and 3).

The bone samples were collected at the National Museum of Archaeology in Valletta in the Summer of 2017, then processed and prepared for further analyses at the Laboratory for Archaeological Science of the University of South Florida's Department of Anthropology. Subsequently, they were submitted to the University of Georgia's Center for Applied Isotope Studies for AMS radiocarbon dating. For the purpose of the analysis, the collagen samples were combusted at 575°C in evacuated/sealed ampoules in the presence of CuO. The resulting carbon dioxide was cryogenically purified from the other reaction products and catalytically converted to graphite using the method of Vogel *et al.* (1984). Graphite $^{14}\text{C}/^{13}\text{C}$ ratios were measured using the CAIS 0.5 MeV accelerator mass spectrometer. The sample ratios were compared to the ratio measured from Oxalic Acid I (NBS SRM 4990). The sample $^{13}\text{C}/^{12}\text{C}$ ratios were measured separately using a stable isotope ratio mass spectrometer and expressed as $\delta^{13}\text{C}$ with respect to VPDB, with an error of less than 0.1‰. The quoted uncalibrated dates have been given

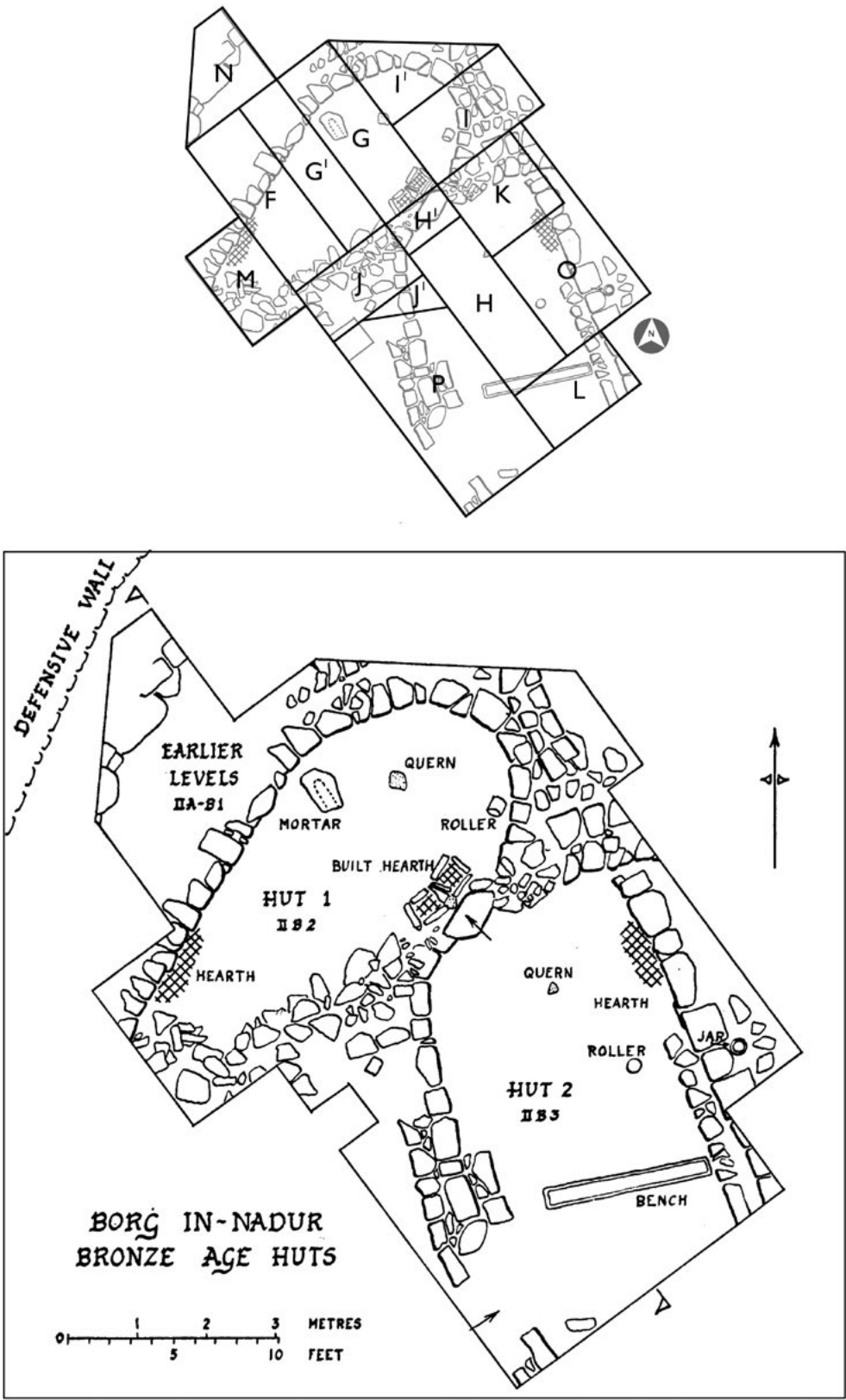


Figure 1. The Borg in-Nadur settlement. Top: Plan of the excavation area of huts 1 and 2 with indication of the trenches F-P (Vella 2015); bottom: Detailed plan of huts 1 and 2 (Trump 1961).

in radiocarbon years before 1950 (years BP), using the ^{14}C half-life of 5568 years. The error is quoted as one standard deviation and reflects both statistical and experimental errors. The dates have been corrected for isotope fractionation (Table 2).

The dates below were calibrated using the Calib Radiocarbon Calibration Program Rev. 7.0.4, using 2 sigma probability ranges obtaining the following results: 100121, 1774-1680 cal BC (93.4%); 100122, 939-837 cal BC (94.5%); 100065A, 860-807 cal BC (78.0%) (Figure 3).

Figure 2. Close-up of the central sector of Qlejgħa tal-Baħrija with indication in red of Trump's trenches (see chapter 1, Figure 2).

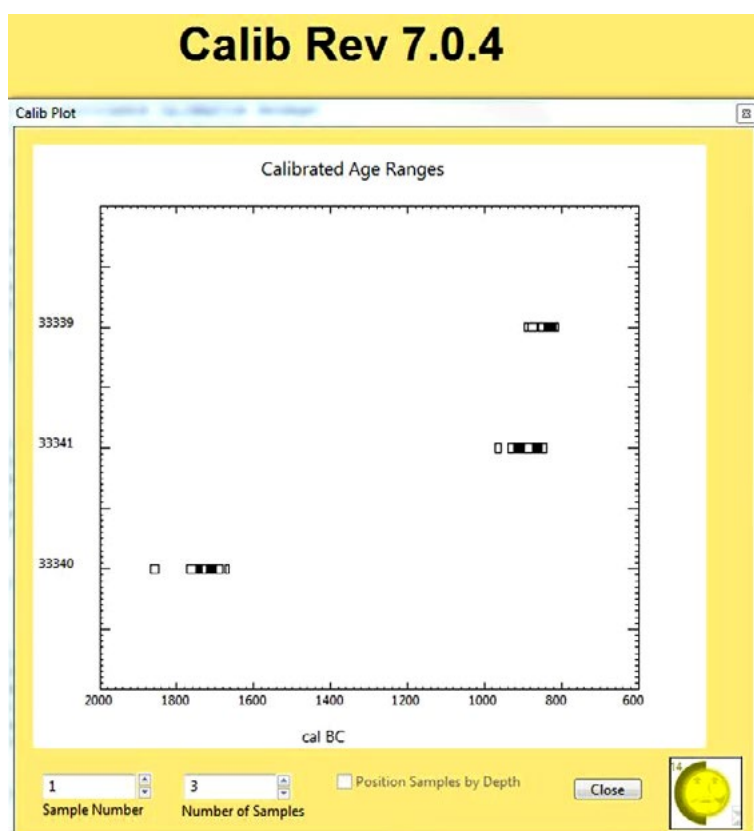
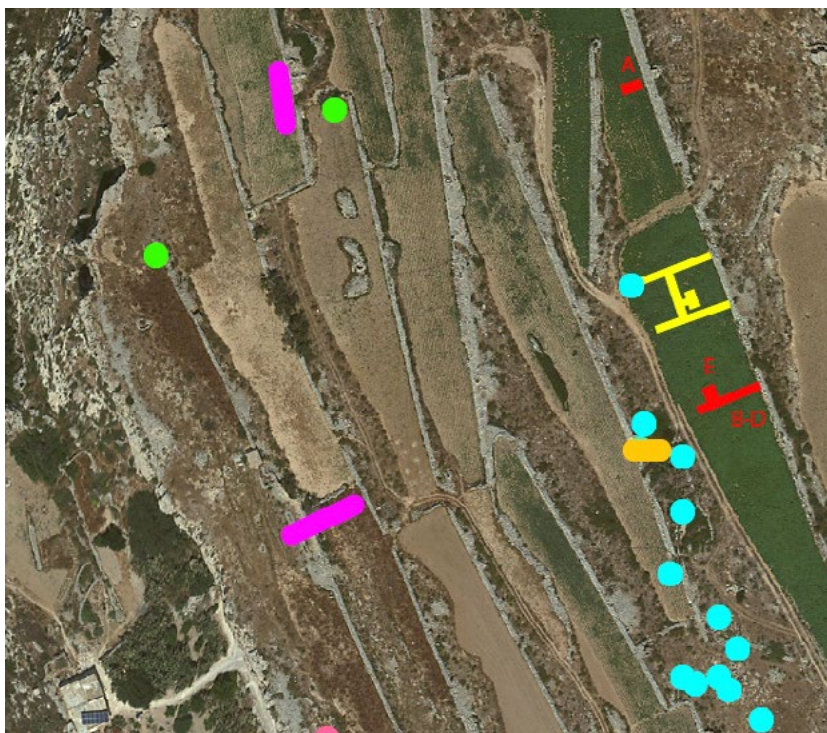


Figure 3. 2-sigma radiocarbon calibration graph for the three samples tested.

Sample no.	Sample type	Site	Context	Pottery type found in the context
100121	Proximal phalanx (Bos Taurus)	Borġ in-Nadur settlement	Trench N, layer 8	Tarxien Cemetery
100122	Metapodium (Bos Taurus)	Borġ in-Nadur settlement	Trench H, layer 2	Late Borġ in-Nadur/Qlejgħa tal-Baħrija
100065A	Horn (Ovis vel Capra)	Qlejgħa tal-Baħrija	(Trench D, Layer 5)	Late Borġ in-Nadur/Qlejgħa tal-Baħrija

Table 1. List of the samples submitted to radiocarbon dating.

Specimen	$\delta^{13}\text{C}$, ‰	$\delta^{15}\text{N}$, ‰	C/N	^{14}C , years BP	±	pMC	±
100121	-20.6	7.3	3.3	3430	20	65.26	0.18
100122	-20.9	5.8	3.3	2760	20	70.93	0.19
100065A	-21.6	5.2	3.4	2690	20	71.52	0.2

Table 2. AMS radiocarbon dating results for samples 100121, 100122, 100065A.

3. Discussion

With respect to the date obtained for the pure Tarxien Cemetery stratum from trench N, layer 8 of the Borġ in-Nadur settlement, it appears perfectly compatible with other absolute dates obtained for this period on samples from the cemetery of Tarxien and from Xagħra Circle (Recchia – Fiorentino 2015) (Figure 4).

The novelty is instead represented by the other two dates, imperative to chronologically define the pottery production of Borġ in-Nadur and Baħrija. That the two pottery productions belonged to two separate and progressive periods was already known (Cazzella – Recchia 2012, p. 34, Tanasi 2015a) and the absolute dates confirm it while pointing to a possible and perfectly expectable moment of overlap. This new data, however, disproves the traditional interpretation that the end of the Borġ in-Nadur pottery production and, therefore, of the Late Borġ in-Nadur style, occurred at the end of the 12th c. BC (Recchia and Cazzella 2011). Even unlikely seems the hypothesis that the Late Borġ in-Nadur style developed in the second half of the 13th c. BC (Tanasi 2015a) as there are too many typological gaps to infer that the style evolved throughout four centuries. At the same time, the idea that the Baħrija period started already in the 11th c. BC (Recchia – Cazzella 2011; Tanasi 2015a) has to be dropped. In the light of these new data, the chronological definition for the latest production of Borġ in-Nadur pottery and the emergence of the Baħrija style offered by D. H. Trump (II B3/IIC period) to 950-750 BC seems definitely closer to the absolute dates obtained (Trump 1961).

Another major contribution offered by these data is related to the comparative chronology between Sicily and Malta. All the Borġ in-Nadur pottery found in sites of Middle Bronze Age Sicily (Tanasi 2008; 2011; 2015b) can be clearly interpreted as related to the Classic Borġ in-Nadur phase. In the Early Iron Age layers of the settlement of Thapsos (Cassibile *facies* 1050-850 BC) examples of Late Borġ in-Nadur pottery were instead found in a good number (Vella *et al.* 2011). The alleged presence of Baħrija pottery in those same layers was never confirmed and this information derives by a mis-interpretation of the Late Borġ in-Nadur materials, totally understandable considering the limited data available at that time (Voza 1973; 1980-1981; see chapter 10). But the possible contemporaneous relationship between the Baħrija period with the Cassibile *facies* is testified by the discovery of some sherds of plumed painted pottery and one double spiral bronze fibula both related to the Sicilian Cassibile culture, which were found together in a layer dated to Baħrija period in Apse IVC of Tas-Silġ North (Cazzella – Recchia 2012). The absolute dates obtained definitely confirm the contemporaneity between the Late Borġ in-Nadur phase and Baħrija period with the Cassibile culture and even partly, with the subsequent Pantalica South culture in Sicily.

Such revolutionary chronological redefinition of the last stage of the Borġ in-Nadur period and the Baħrija period seems to put an end to the controversy about the end of prehistory in Malta and the beginning of the Phoenician era. The majority of scholars are inclined to assign the first contact between the Maltese natives and the Phoenicians travelers to the the second half of the 8th c. BC, on the basis of the chronology offered by

Lab.-no.	Site	Culture	Context	Material	Conventional radiocarbon age BP	Calibrated years BC (1 σ range)	Calibrated years BC (2 σ range)
BM-141	Tarxien (Malta)	Tarxien Cemetery	Cinerary urn south temple	Beans	3880±150 BP	2580–2130	2870–1940
BM-711	Tarxien (Malta)	Tarxien Cemetery	Cinerary urn south temple	Barley	3354±76 BP	1740–1530	1880–1490
BM-710	Tarxien (Malta)	Tarxien Cemetery	Cinerary urn south temple	Beans	3286±72 BP	1660–1460	1740–1420
OxA-3750	Xagħra (Gozo)	Tarxien Cemetery	Tarxien Cemetery deposit, northern edge of the site	Animal bone	3580±75 BP	2040–1770	2140–1700

Figure 4. Radiocarbon dates for the Tarxien Cemetery period (Recchia – Fiorentino 2015).

Greek pottery imports found in the earliest Phoenician tombs (Vella 2005). Claudia Sagona, a specialist on Phoenician/Punic Malta, however, has not embraced this interpretation, inferring instead that that first contact already had happened around 1000 BC (Sagona 2011). The foundation of her interpretative angle relies on a very problematic context, a rock-cut pit at Mtarfa, where a bell-shaped Bronze Age pit (Trump 1961; Evans 1971) containing a deposit of ceramics was excavated in 1939 by J. B. Ward-Perkins, and erroneously interpreted as a tomb. The deposit, clearly defined by the excavator himself as being 'evidently rifled in antiquity', was essentially comprised of a homogenous group of Borġ in-Nadur pottery of a later style and in the lowest level, a Phoenician double-nozzled lamp. Underplaying the fact that the deposit was disturbed and without further supporting evidence, Sagona has incorporated this rather weak evidence into her entire chrono-typological system in which the repertoire of Mtarfa represents a phase in which Phoenicians and Borġ in-Nadur communities already co-existed in the Archipelago (Melita I Archaic 1000-750 BC), *de facto* anticipating by 250 years the arrival of the early Phoenician travelers (Vella 2005). To not have found any Phoenician material in layer 2 of trench H at the Borġ in-Nadur settlement (Tanasi 2015a) and in layer 5 of the trench D at Qlejġha tal-Baħrija (Tanasi in press) seems to corroborate the hypothesis of the arrival of the first Phoenicians in the archipelago not earlier than the second half of the 8th c. BC.

4. Conclusions

These long awaited absolute AMS radiocarbon dates have provided extremely significant data to address a previously unanswered research question shedding light on critical subjects such as the transition between the Late Borġ in-Nadur phase and the Baħrija period, the relationship between Sicily and Malta at the crossroads between the Bronze and Iron Ages, and most importantly the chronological term for the end of Prehistory and the beginning of the Phoenician era in Malta.

Waiting for the publication of new radiocarbon dates obtained on samples analyzed from several Bronze Age locations in the Archipelago in the frame of the Fragsus Project (Caroline Malone, personal communication) and on samples from the excavation of the Italian Archaeological Mission at Tas-Silġ North (Giulia Recchia, personal communication), the data obtained for the sites of Borġ in-Nadur and Qlejġha tal-Baħrija finally offer the necessary chronological frame for the hard work of reappraisal already concluded (Tanasi – Vella 2011; Tanasi – Vella 2015; see Introduction).

References

- Cazzella, A., Recchia, G. 2012. Tas-Silġ: the Late Neolithic megalithic sanctuary and its re-use during the Bronze Age and Early Iron Age, *Scienze dell'Antichità* 18, pp. 15-38.
- Evans, J. D. 1971. *The Prehistoric Antiquities of the Maltese Islands. A Survey*. London: The Athlone Press.
- Peet, T. E. 1910. Contributions to the study of the Prehistoric Period in Malta, *Papers of the British School at Rome* 5, pp. 141-163.
- Recchia, G., Fiorentino, G. 2015. Archipelagos adjacent to Sicily around 2200 BC: attractive environments or suitable geo-economic locations?, in H. H. Meller, H. W. Arz, R. Jung, R. Risch (eds), *2200 BC. A climatic breakdown as a cause for the collapse of the old works?*, Tagungen des Landesmuseums für Vorgeschichte Halle Band 12/I, pp. 305-319.
- Recchia, G., Cazzella, A. 2011. Maltese late Prehistoric ceramic sequence and chronology: on-going problems, in C. Sagona (ed.), *Ceramics of the Phoenician-Punic world: collected essays*. Leuven: Peeters, pp. 373-395.
- Sagona, C. 2011. Observations on the Late Bronze Age and Phoenician-Punic pottery in Malta, in *Ceramics of the Phoenician-Punic World: Collected Essays*, (ed.) C. Sagona. (Ancient Near Eastern Studies Supplement 36). Louvain: Peeters, pp. 397-432.
- Tanasi, D. 2008. *La Sicilia e l'arcipelago maltese nell'età del Bronzo Medio*. Palermo: Officina Studi Medievali.
- Tanasi, D. 2011. Living and dying in a foreign country. Maltese immigrants in Middle Bronze Age Sicily, in Tanasi, D., Vella, N. C. (eds), *Site, Artefacts, Landscape: Prehistoric Borġ in-Nadur, Malta*. Monza: Polimettrica, pp. 283-337.
- Tanasi, D. 2013. Prehistoric Painted Pottery in Malta: One century later, *Malta Archaeological Review*, pp. 5-13.
- Tanasi, D. 2014. Lighting up the dark. The role of Għar Mirdum in Maltese prehistory, in Gullì, D. (ed.) – *From Cave to Dolmen. Ritual and symbolic aspects in the prehistory between Sciacca, Sicily and the central Mediterranean*. Oxford: Archaeopress, pp. 287-308.
- Tanasi, D. 2015a. The pottery from the excavation campaign of David H. Trump (1959) at the settlement of Borġ in-Nadur, in Tanasi, D., Vella, N. C. (eds), *The late prehistory of Malta: essays on Borġ in-Nadur and other sites*. Oxford: Archaeopress, pp. 35-98.
- Tanasi, D. 2015b. Borġ in-Nadur pottery abroad: a report from the Sicilian necropoleis of Thapsos and Matrensa, in Tanasi, D., Vella, N. C. (eds), *The late prehistory of Malta: essays on Borġ in-Nadur and other sites*. Oxford: Archaeopress, pp. 173-784.
- Tanasi, D., Vella, N. C. 2011. *Site, Artefacts, Landscape: Prehistoric Borġ in-Nadur, Malta*. Monza: Polimettrica.
- Tanasi, D., Vella, N. C. 2015. *The late prehistory of Malta: essays on Borġ in-Nadur and other sites*. Oxford: Archaeopress.

- Trump, D. H. 1961. The Later Prehistory of Malta, *Proceedings of Prehistoric Society* 27, pp. 253-262.
- Vella, N. C. 2005. Phoenician and Punic Malta. *Journal of Roman Archaeology* 18, pp. 436-450.
- Vella, N. C., Tanasi, D., Anastasi, M. 2011. Mobility and transitions: the south central Mediterranean on the eve of history, in Tanasi, D., Vella, N. C. (eds), *Site, Artefacts, Landscape: Prehistoric Borġ in-Nadur, Malta*. Monza: Polimetrica, pp. 251-282.
- Vogel, J. S., Southon, J. R., Nelson, D. E., Brown, T. E. 1984. Performance of catalytically condensed carbon for use in accelerator mass spectrometry, *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms* 5.2, pp. 289-293.
- Voza, G. 1973. Thapsos: resoconto sulle campagne di scavo del 1970-71, *Atti della XV Riunione Scientifica*, Verona e Trento, 27-29 ottobre 1970. Firenze: Parenti, pp. 133-157.
- Voza, G. 1980-1981. L'attività della Soprintendenza alle Antichità della Sicilia Orientale. Thapsos, *Kokalos* 26-27, II,1, pp. 675-680.

Chapter 10.

A critical revision of the Late Borġ in-Nadur/Baħrija-type pottery from the Thapsos settlement (Sicily)

Davide Tanasi

1. Introduction

One of the several characterizing features of the Sicilian Middle Bronze Age (Thapsos culture, mid-15th – mid-13th c. BC) is the interaction with indigenous communities of the Maltese Archipelago, which is mostly testified by a large distribution of Borġ in-Nadur pottery (both imports and local imitations) in domestic and funerary sites of south-central Sicily (Tanasi 2008; 2010).

This trend, however, seems to drastically decrease during the following period (North Pantalica culture, mid-13th – mid-11th c. BC) when the only evidence of Borġ in-Nadur pottery comes from the settlement of Cannatello, where the signature red-slipped pottery has been found in North Pantalica layers (Jones *et al.* 2014, pp. 229-233) and identified as imports on archaeometric basis (Tanasi 2014; Raneri *et al.* 2015).

With the beginning of the Final Bronze Age (Cassibile culture, mid-11th – mid-9th c. BC), the settlement of Thapsos, the site with the highest concentration of Borġ in-Nadur type pottery in both funerary and domestic context (Tanasi 2008), was in part re-occupied with renewed evidence of Maltese-type pottery after a possible period of abandonment (the abandonment of the site has been largely debated but, in our opinion, factually proved (Alberti 2007; Cazzella and Recchia 2008; Tanasi 2015)).

This evidence, generally defined as Late Borġ in-Nadur/Baħrija pottery at the time of the preliminary reports was never reassessed in relation to the context of their provenance to the larger picture of the relationship between Sicily and the Maltese Archipelago in the second half of the 2nd millennium BC. Leaving aside the debate about whether Baħrija pottery should be considered a style or the indicator of a different culture, it has already ascertained that the two pottery productions of Late Borġ in-Nadur and Baħrija are chronologically consecutive, with a period of overlap and with a lower chronological end for Baħrija around the middle of the 8th c. BC (see chapter 3 and 9). The present contribution aims to re-evaluate such materials

focusing on a group of unpublished ceramics from the Archaeological Museum ‘Paolo Orsi’ of Siracusa as a starting point to redefine the significance of their presence during the Final Bronze Age re-occupation of the site of Thapsos.

2. Late Borġ in-Nadur/Baħrija-type pottery from the Final Bronze Age phases of Thapsos occupation

A Final Bronze Age occupation for Thapsos was initially inferred by Bernabò Brea (1970) with the discovery of two quadrangular rooms by Masseria Calvo. Subsequently, the intensive excavations carried out by G. Voza shed further light on this matter showing that at least five major areas of the central part of the Middle Bronze Age settlement had traces of re-occupation in the Final Bronze Age (Figure 1).

In quadrant XLVII/33 (Area 1), Voza uncovered a square room with a plan and orientation that conflicts with the general outline of the Middle Bronze Age Complex B. In it he found an assemblage of pottery including several pithoi, ‘plumed ware’ typical of the Cassibile facies, unusual shapes of pottery with incised and excised decoration and three vessels identified as comparable to Maltese examples from the sites of Borġ in-Nadur and Baħrija (Voza 1973, pp. 149-154) (Figure 2).

The findings in quadrant XLVII/31 (Area 2) are comparable to the evidence of the rectangular room, which seems to interrupt the development of the street bordering the eastern side of Complex B. This was interpreted as contemporaneous with that in XLVII/33 (Voza 1973, 154), but no materials were offered to support such a statement.

While discussing findings and chronological features of the rooms in XLVII/31 and XLVII/33 in the publication dedicated to the exploration of Complex B, Voza mentions new materials attributable to the ‘Baħrija culture’ through fabric, shape and decoration found in a room in the southern area of the residential district (*ambiente nella zona sud dell’abitato*), without providing any specific information about the exact quadrant

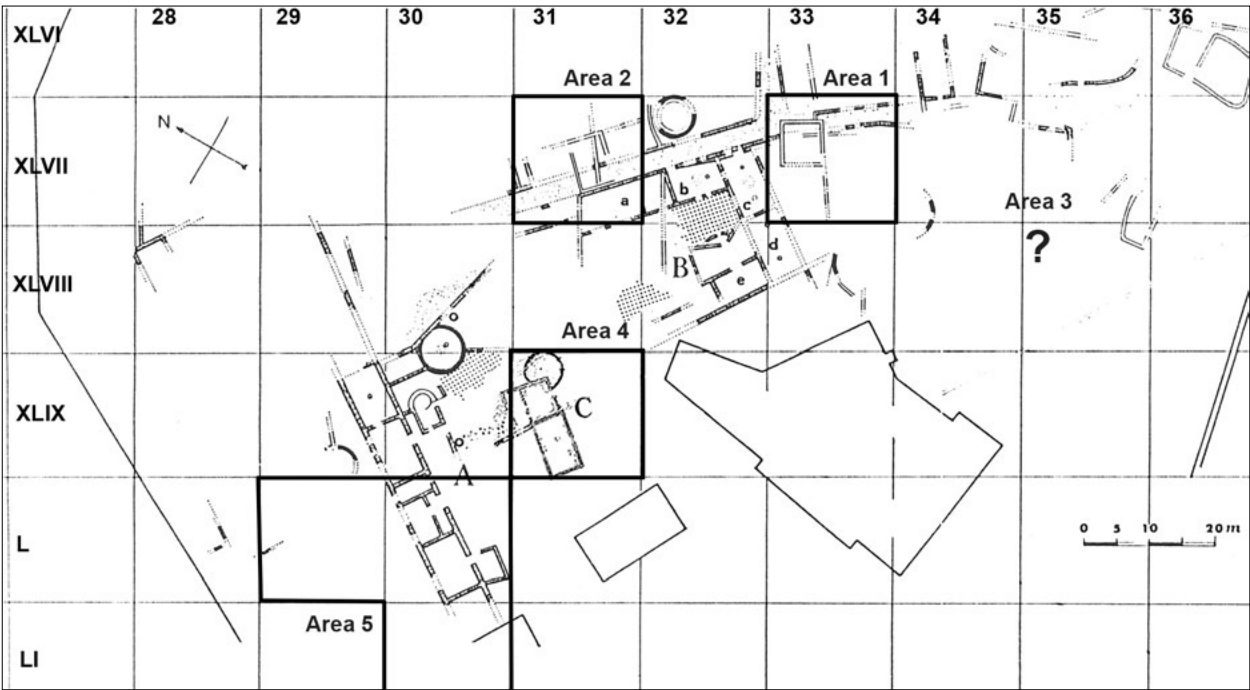


Figure 1. Plan of Thapsos' residential district (Complex A and B) with indication of the five areas containing traces of occupation in the Final Bronze Age and Maltese-type pottery (after Voza 1973).

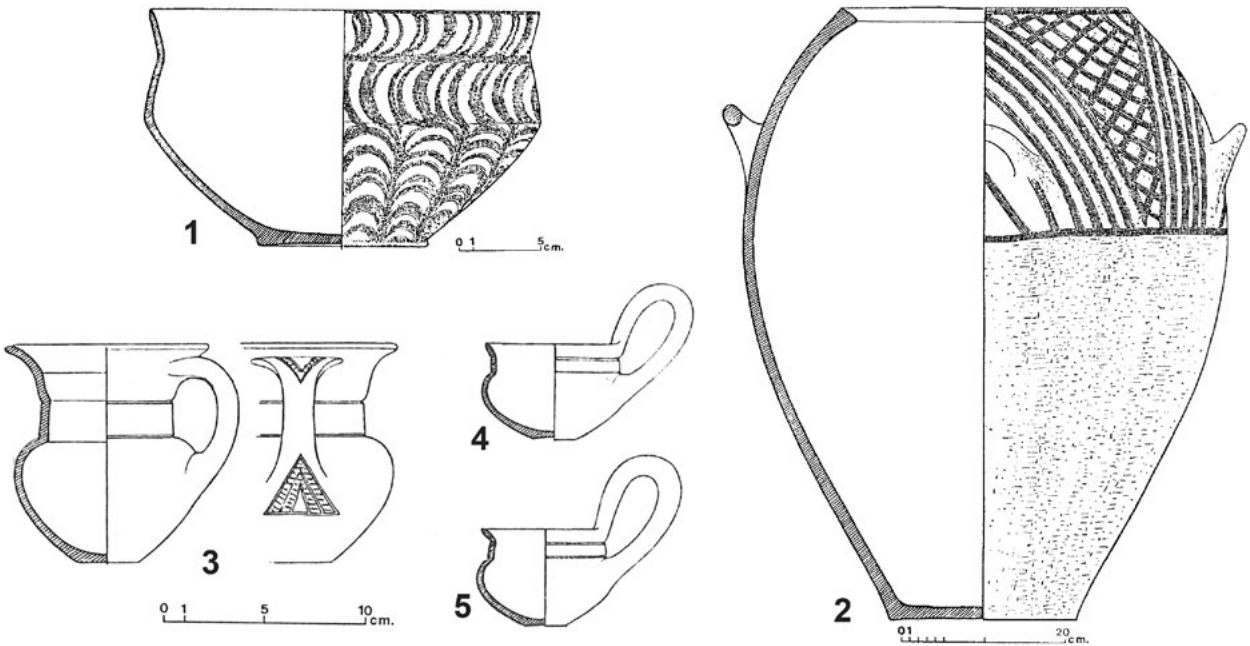


Figure 2. Pottery found in the square room South to Complex B, in quadrant XLVII/33 (after Voza 1973).

(Voza 1973, pp. 154-156, Figure 134) (Figure 3). Even in the absence of precise provenance information, following Voza's logic, it seems appropriate to infer that he was likely referring to an area nearby Complex B and not far from the rooms in XLVII/31 and XLVII/33 (Area 3).

Another area of interest is that of quadrant XLIX/31, where Voza uncovered a rectangular room south west

of the hut no. 4, incorporated into Complex A and also known as Room C (Area 4).

The exploration of the room produced a large quantity of local pottery, and a group of ceramics interpreted as 'attributable to a later phase of Borg in-Nadur culture if not Bāhrija culture' and comparable to the assemblage previously found in the square room of XLVII/33 (Voza 1980-1981, p. 678, tav. CXIX). In that assemblage, there

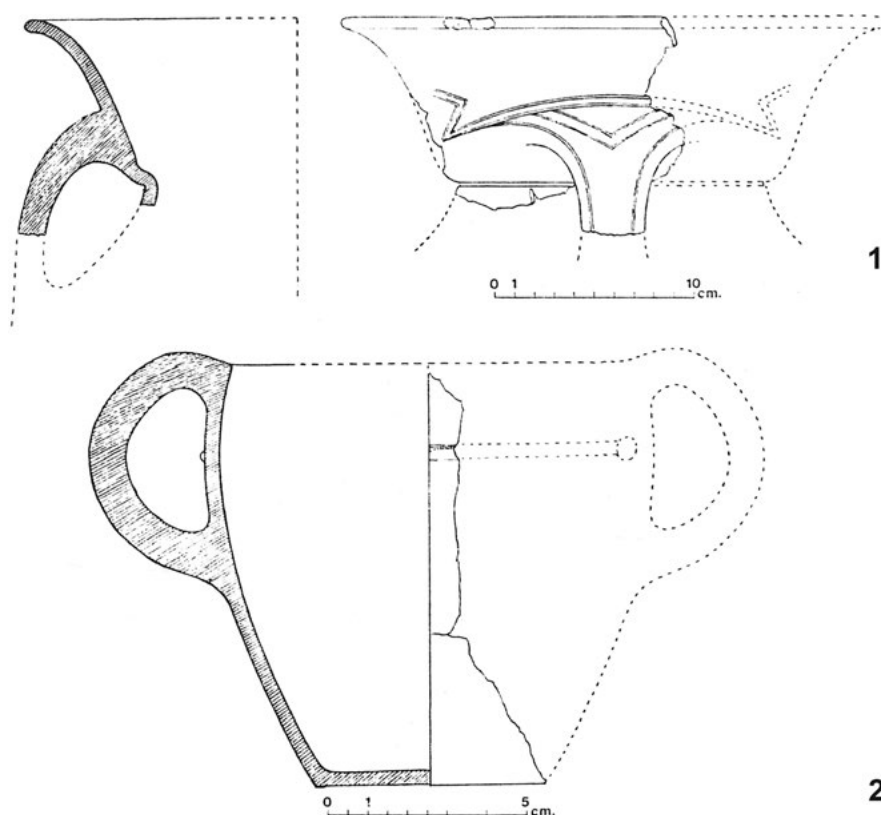


Figure 3. Pottery from a room in the southern area of the residential district (after Voza 1973).

was also a large amphora (Voza 1980-1981, p. 679, tav. CXIX, 12) and two large ovoid pithoi (Voza 1980-1981, p. 679, tav. CXIX, 1, 2) compared by Voza to the materials from Aeolian contexts of the Final Bronze Age (Ausonio II facies) (Figure 4). Furthermore, in a previous publication, Voza mentions two more vessels recovered in the topsoil of an area South to Complex B, which basically means in the vicinity of the subsequently explored Room C (Voza 1973, p. 148, fig. 8) (Figure 5).

A last area (Area 5) which produced similar material, is the rectangular room of Complex A, comprising of the area between quadrants LI/30, L/29 and L/30, which was never described in any publication but is actually represented by a group of unpublished vessels from Voza's excavations, currently kept in the Archaeological Museum 'Paolo Orsi' of Siracusa. In our opinion, these deserve a detailed study.

3. Assemblage of pottery from the rectangular room of Complex A, comprised between quadrants LI/30, L/29 and L/30

The materials in question do not have a formal inventory number of the Museum of Siracusa and are presented as a homogenous group with the same provenance. They were largely fragmentary at the time of their discovery, which presumably happened either in 1970-1972 (Voza 1973) or a decade later (Voza 1980-1981) when Complex B was explored. The nine vessels were fully restored. (Figures 4-5):

TH/1 – Juglet with ovoid depressed base, low distinct conical neck with rounded rim, embossed base, vertical strap handle between rim and shoulder. Cut-out decoration: couple of parallel horizontal lines at the edges of the neck, double couple of horizontal parallel lines, on the top shoulder and on the maximum expansion, crossed by a series of couples of vertical lines from the base to the top shoulder. Soft porous slipped fabric with lithic grits (10% fine); body colour 10R 6/6; slip colour 10YR 6/6; reassembled by many fragments; largely covered with greyish encrustations; h. 12.5; diam. mouth 11.9; diam. base 4.5; th. handle 1.3 cm.

TH/ 2 – Juglet with ovoid depressed body, low distinct conical neck with rounded rim, embossed base, vertical strap handle between rim and shoulder. Cut-out and impressed decoration: horizontal series of impressed dots in the central part of the neck, couple of parallel horizontal line at the edges of the neck. Soft porous slipped fabric with lithic grits (10% fine); body colour 10R 6/6; slip colour 10YR 6/6; reassembled by many fragments; largely covered with greyish and blackish encrustations; h. 10.8; diam. mouth 10.5; diam. base 3; th. handle 1 cm.

TH/3 – Dipper cup with deep conical body with indistinct inverted rim, embossed base, vertical surmounting strap handle. Cut-out decoration: couple of horizontal parallel lines below the rim joined by a series of couples of vertical parallel lines, terminating by the base in another horizontal line. Hard slipped

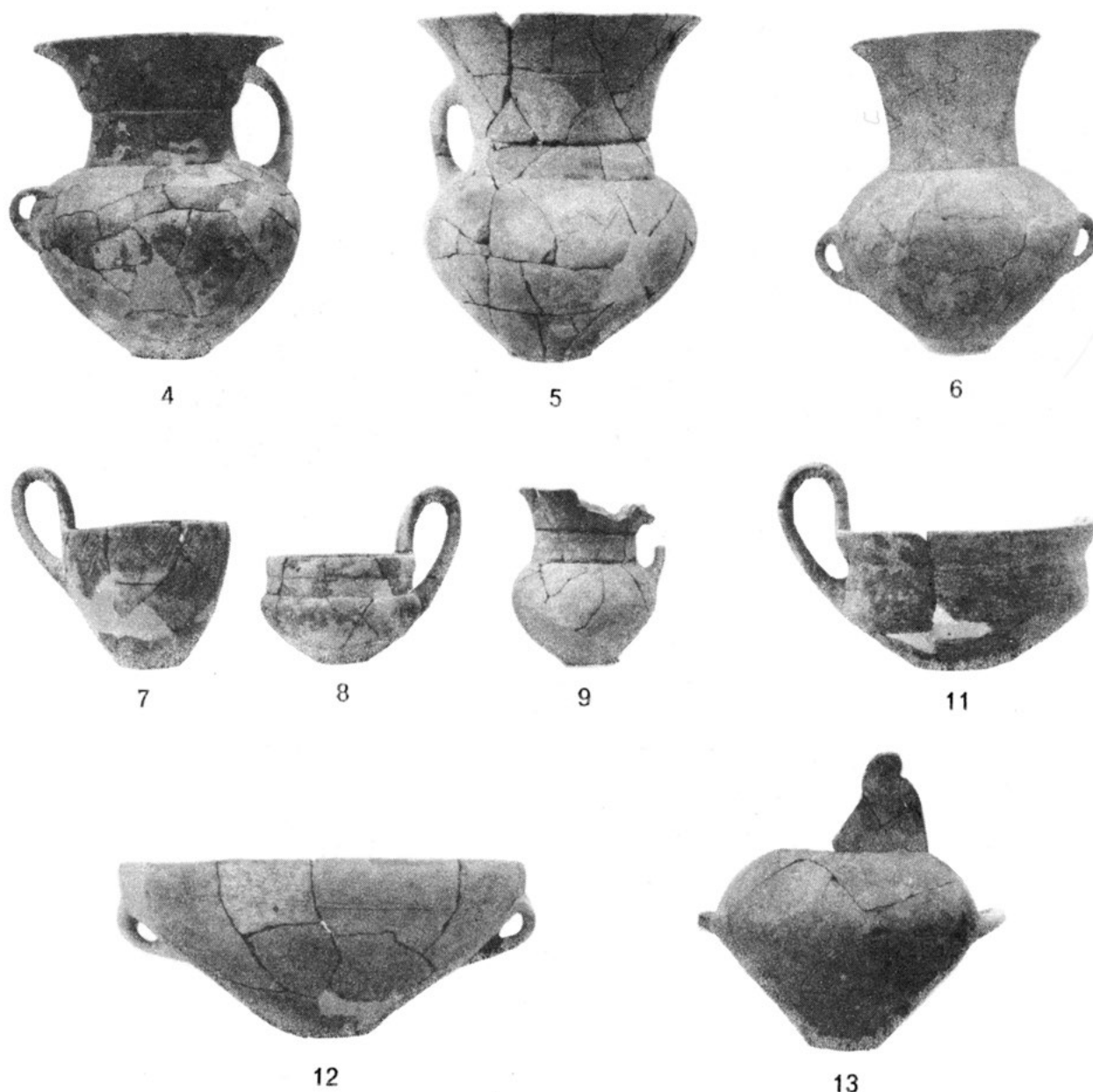


Figure 4. Pottery from the rectangular room south-west to hut no. 4, in quadrant XLIX//31 (after Voza 1980-1981)

fabric with lithic grits (10% fine); body colour 10R 6/8; slip colour 10YR 5/6; reassembled by many fragments; largely covered with greyish encrustations and with black burning patch on the handle; h. 16.2; diam. mouth 12.8; diam. base 6.2; th. handle 1.7 cm.

TH/4 – Vertical loop handle and portion of hemispheric body from a miniature dipper cup; undecorated; soft porous fabric, thick red slip, lithic grits (10% fine); body colour 10R 5/8; slip colour 10YR 6/6; intact, largely covered with greyish encrustations; dimm. 7.5 x 4 cm; diam. handle 0.9 cm.

TH/5 – Miniature dipper cup with shallow truncated cone body with indistinct squared rim, surmounting catapult (or T-shaped) handle with pointed edges,

embossed base; undecorated; soft porous fabric, thick red slip, lithic grits (10% fine); body colour 10R 5/8; slip colour 10YR 6/6; reassembled by many fragments; h. 8.5; diam. mouth 7; diam. base 3; th. handle 0.9 cm.

TH/6 – Miniature dipper cup with shallow truncated cone body with indistinct squared rim, surmounting catapult (or T-shaped) with pointed edges, embossed base; undecorated; soft porous fabric; body colour 10R 5/8; slip colour 10YR 6/6; reassembled by many fragments; completely covered by brownish encrustations; h. 6.5; diam. mouth 5.7; diam. base 2.7; th. handle 0.9 cm.

TH/7 – Miniature juglet with globular deep body, distinct everted rim, flat base; decoration with plastic applications: series of globular pellets (just one

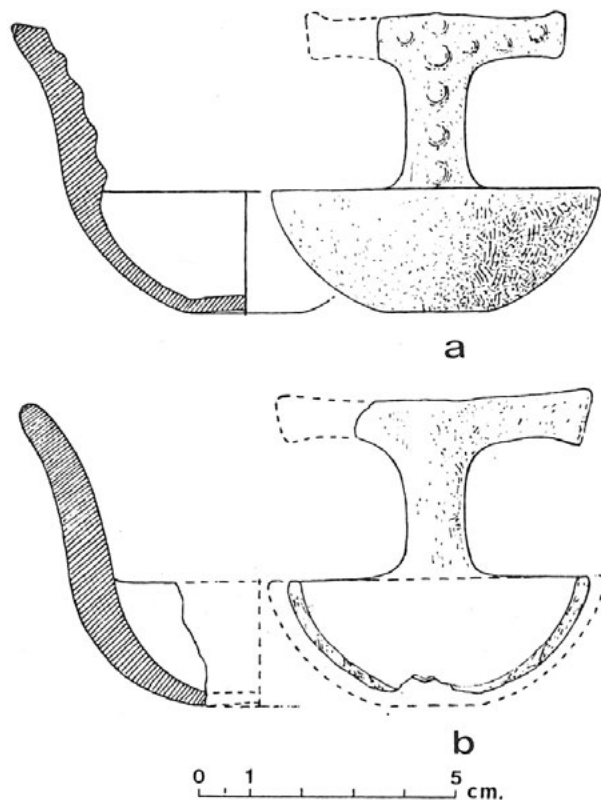


Figure 5. Dipper cups from the topsoil in an area South to Complex B (Voza 1973).

surviving) on the top shoulder; soft porous fabric; completely intact cover with light brown encrustations; h. 3.5; diam. mouth 4.1; diam. base 2.2; diam. handle 1 cm.

TH/8 – Miniature jar with globular body, indistinct rounded everted rim; slightly rounded base, couple of vertical strap handles between mouth and shoulder; decoration with plastic applications: horizontal series of large pellets below the rim; intact, one handle missing, completely covered by brownish encrustations; h. 3.8; diam. mouth 3.1; diam. base 2; th. handle 0.8 cm.

TH/9 – Miniature jar with globular body, indistinct rounded everted rim; slightly rounded base, couple of vertical surmounting loop handles between mouth and shoulder; decoration with plastic applications: horizontal series of large pellets below the rim; intact, one handle missing, completely covered by brownish encrustations; h. 4.2; diam. mouth 2.5; diam. base 2; diam. handle 0.6 cm.

From a technological point of view, despite the massive encrustations, the vessels seem to be handmade and to share the same fabric, with TH/4 and TH/6 showing only a thick slip of dark red colour. The cut-out decoration was made using a spatula-like tool with a straight edge, which removed a good amount of clay from the body, as observable on TH/1, TH/2 and TH/3. The pellets on the miniature vessels TH/7, TH/8 and TH/9, were applied straight on the body without any mortise and

tenon system which caused them to drop off as in TH/7. The black burning patches visible on TH/2 and TH/3 occurred post-firing and before the formation of the encrustations.

With respect to typology, at a first glance none of the vessels seems to belong to any Sicilian Bronze Age culture. Indeed the similarity is stronger with shapes of the Maltese Borg in-Nadur repertoire. TH/1 and TH/2 resemble the juglets of type 3A, attested at the Borg in-Nadur temple and settlement as well as all those Sicilian Middle Bronze Age sites that produced Borg in-Nadur type pottery (Tanasi 2011, p. 114; 2015, pp. 50-51). TH/7 appears to be a miniature and coarse version of the same type, which finds striking parallels with some examples from Victoria at Gozo (MAR 1955-1956, p. 10). TH/2 presents a decoration comprised of a series of impressed dots which is one of the most distinctive features of the pottery production of Late Borg in-Nadur (Tanasi 2015, pp. 70-73). TH/3 corresponds to dipper cup type 1, while TH/4 closely recalls type 3, and TH/5 and TH/6 belong instead to type 4, the most distinctive and peculiar, due to the surmounting catapult handle.

All these typologies are widely attested in the Maltese Archipelago (Tanasi 2011, pp. 114-117; 2015, pp. 56-60). TH/8 and TH/9 are undifferentiated miniature non-functional two-handled jars which do not have close parallels except for the typical plastic decoration with pellets, which is typical of the Late Borg in-Nadur phase (Tanasi 2015, p. 73).

Considering the lack of information about the context of provenance and features of the stratigraphic deposit of the room between quadrants LI/30, L/29 and L/30 and being well aware of the risks of further speculations, it is possible to make a few observations.

Generally speaking, the group of nine vessels shares the same decorative and technological features and shows strong typological affinities with the Borg in-Nadur pottery repertoire. Although all the shapes are attested in the repertoire of the Classic Borg in-Nadur phase, the peculiar cut-out, impressed and plastic decorative patterns point more towards the Late Borg in-Nadur phase. What the nine vessels definitely do not show is any of the characterizing features of Bahrija pottery. As we now know (see chapter 3), Bahrija pottery has a peculiar and limited shape repertoire, where carinated open shapes play a major role, and are characterized by typical dark brown or black lustrous surfaces and by a combination of incised, cut-out and impressed decoration aimed at creating complex and labyrinthine patterns. The dark red slip, the typical plastic pellets and the simpler linear decorative patterns of the Late Borg in-Nadur production does not find space in the Bahrija style pottery.



Figure 6. Assemblage of pottery from the rectangular room of Complex A, between quadrants LI/30, L/29 and L/30 (photo courtesy of Archaeological Museum of Siracusa).

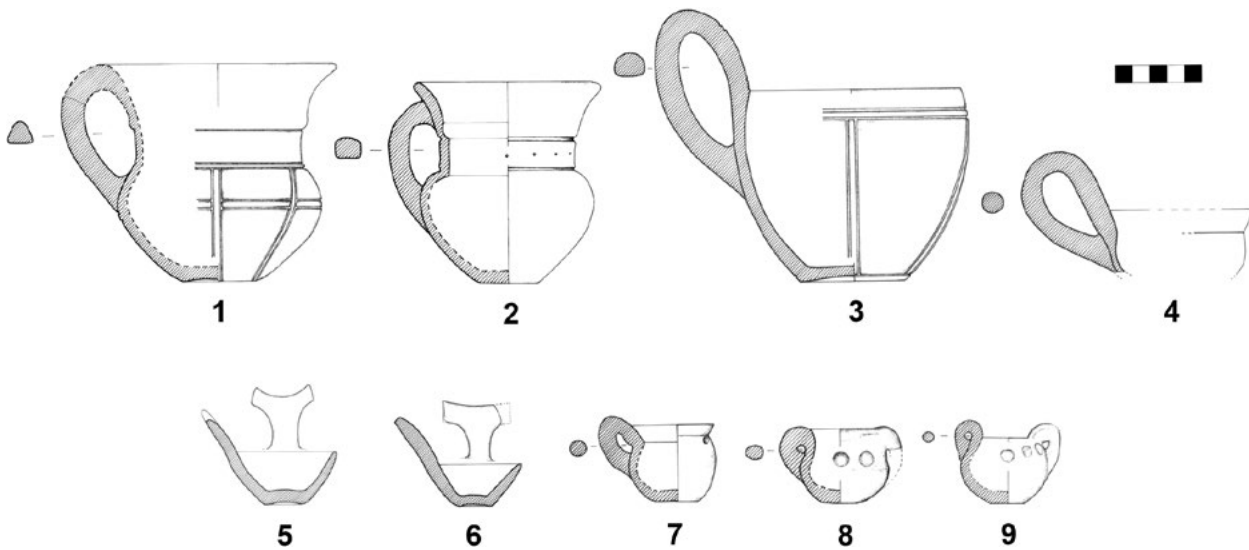


Figure 7. Assemblage of pottery from the Rectangular room of Complex A, comprised between quadrants LI/30, L/29 and L/30 (drawings Rita Musumeci).

4. Reassessing the evidence: Late Borg in-Nadur or Bahrija?

In order to better understand the significance of the materials from the room between quadrants LI/30, L/29 and L/30, it is necessary to reassess the findings from the other four areas to establish whether they are typologically and chronologically compatible. Although these materials were just preliminarily published and not fully studied or directly observed by the author, it is possible to present some thoughts.

With respect to the pottery from the square room South of Complex B, in quadrant XLVII/33, the juglet in Figure

2.3 is of the same type of the examples TH/1 e TH/2 discussed above and easily falls in the repertoire of the Late Borg in-Nadur phase, but the peculiar triangular decorative motif repeated twice on the attachments of the strap handle, with the combination of incised, cut-out and impressed decoration shows more similarities with the Bahrija decorative palette (see chapter 3). The two carinated dipper cups with embossed bases associated with it, depicted in Figures 2.4, 2.5, found comparisons with examples from Bahrija (see chapter 3), but they are also comparable to a well-known group of dipper cups typical of the Sicilian Early Iron Age (Leighton 2019, pp. 50-51). Without further data about fabric and technology and without being certain about

their context of provenance, it would be risky to classify them one way or the other.

The two fragmentary vessels from the room in the southern area of the residential district, the juglet depicted in Figure 3.1a-b and the cup from Figure 3.2, instead show the typical decorative features of the Late Borġ in-Nadur phase, as for example, the linear cut-out decoration on the juglet and the series of plastic pellets inside a cut-out horizontal line on the cup.

The materials from the rectangular room south-west of hut no. 4, in quadrant XLIX/31, also show quite interesting features. Being technically unpublished, we can only make a few observations on the basis of the picture depicting them, as no further description is offered in the publication where they were presented. They all appear to lack decoration of any kind and not much can be said about their fabric and technology except that the jug in Figure 3.4, currently on display at the Siracusan Museum, shows traces of red slip and has a height of almost 50 cm. The note on its size is not irrelevant, as the Borġ in-Nadur type juglets known in Sicily (and Malta) usually have much smaller dimensions. Its typology does not find any striking comparison in the Borġ in-Nadur or Bahrija repertoire, being a sort of more mature version of the type 3A. The second small and non-functional vertical loop handle on the shoulder is unusual for it, as opposed to the regular large vertical strap handle, which makes it a *unicum* without comparisons. Its red slip and the lack of decoration brings it closer though to the Late Borġ in-Nadur phase. The jug in Figure 3.5, the dimensions of which are not known, appears to be the typological missing link between the juglets of type 3A and the previously discussed example, again without any close parallels in Malta. The juglet in Figure 3.9 is all in all similar to the juglet from the room in the southern area of residential district and therefore comparable to type 3A. For the three dipper cups, we face again the same issues. Apparently, the example in Figure 3.7 seems closer to TH/3 and therefore should be considered related to the Borġ in-Nadur dipper cup of type 1, while that in Figure 3.8 and 3.11 seems more typologically similar to the dipper cups in the room in the southern area of the residential district, which means it is also comparable to the typical South Pantalica types (Leighton 2019, pp. 50-51). Therefore, nothing more specific can be said about them, without data about their fabric and context of provenance. The cup in Figure 3.11, although belonging to one of the most distinctive typological group of the Borġ in-Nadur repertoire, has very peculiar features, such as the too extreme conical profile, which makes it hard to classify. Assuming now that this group of vessels comes exactly from the same context, it would appear to be linked in terms of chronology to a transitional

phase between Late Borġ in-Nadur and Bahrija productions. The two dipper cups with surmounting catapult handles depicted in Figure 4.1-2 belong to type 3 and are comparable to examples TH/5 and TH/6. The peculiar decoration with plastic pellets on one of the two dipper cups indicates that it falls in the chronological frame of the Late Borġ in-Nadur production (Tanasi 2015, p. 73).

Such observations make it clear that the Maltese-type materials from the Thapsos settlement, Along with the nine unpublished vessels from the Siracusan Museum, known until now to belong to Borġ in-Nadur and Bahrija phases, are actually compatible with the Late Borġ in-Nadur period and a transitional phase between it and the phase of Bahrija pottery. It is also clear that they are not the outcome of one single chronological event, but rather the result of a series of chronologically progressive events spearheaded by the arrival of such vessels to the site.

5. Issues of comparative absolute chronology

In order to fully understand the significance of such Maltese-type materials in the Final Bronze Age layers of Thapsos, it is necessary to take into considerations aspects of comparative absolute chronology, analyzing in detail the local pottery associated with them in Area 1 and 4. The best site offering comparisons is represented by Cittadella di Morgantina, in the territory of Enna, one of the most important sites defining the mixture of Ausonian II cultural elements with those of Cassibile facies in Final Bronze Age Sicily.

In Area 1, the local vessels associated the with Maltese-type shapes from the square room South of Complex B, in quadrant XLVII/33, the bowl and the pithos show typical features of the mature stage of the Cassibile facies, if not of the beginning of the following South Pantalica facies. The type of carinated bowl or dipper cup (as it is unclear from the reconstructive drawing published by Voza which type of shape it was exactly) with everted rim and flat base, finds a striking comparison with plumed dipper cup no. 173 from trench 16 West, stratum 3A (Leighton 1993, p. 177, pls. 36, 87). The ovoid pithos with painted geometric decoration recalls two examples found in trench 31G/F stratum 4, no. 599 and 614 (Leighton 1993, pp. 213-214, pls. 55, 149, 151).

In Area 4, the Maltese-type materials from the rectangular room south-west of hut no. 4, in quadrant XLIX/31 instead, associated with two distinctive types of amphora. The large ovoid amphora with vertical handles no. 6 finds a close parallel at Cittadella or Morgantina with example no. 197 from trench 16 West, stratum 4 (Leighton 1993, p. 179, pl. 92) and in contexts of the Ausonian II at Lipari (Bernabò Brea, Cavalier

1980, tav. CCXXXI,5). The heart shaped amphora with horizontal handles no. 13 has close comparisons with example no. 294 from trench 29, stratum 6A (Leighton 1993, p. 188, pls. 44, 107) and in Ausonian II layers at Lipari (Bernabò Brea, Cavalier 1980, tav. CCXXXI,9).

All the contexts in which the materials in question find comparison at Cittadella di Morgantina are dated to the 9th-8th c. BC, which corresponds to a late stage of the Cassibile facies and the initial part of the South Pantalica facies (Early Iron Age, Phase IB: Leighton 1993, p. 120).

Therefore, if the Maltese-type materials associated with the local pottery show features more typical of the Late Borġ in-Nadur pottery production than that of Baħrija, it can be inferred that the Late Borġ in-Nadur phase was still ongoing at the transition between the Cassibile and South Pantalica facies in Sicily. The discovery of plumed painted pottery and one double spiral bronze fibula of Sicilian type found in the same layer with Baħrija pottery in Apse IV of Tas-Silġ in North Malta (see chapter 11, Figure 8), interpreted by the excavators as 'both dating back to 10th-8th c. BC', can belong either to the Cassibile or the South Pantalica facies, but without clear data about the context it is hard to tell. However, these findings pair up with the Maltese-type materials found at Thapsos in terms of indicating the existence of a reciprocal system of exchanges between the two islands during the transition between the Bronze and Iron Ages.

The recent radiocarbon dates from a Late Borġ in-Nadur context at the type-site and from another with mixed Late Borġ in-Nadur and Baħrija ceramics at Qlejġħa tal-Baħrija (see chapter 9) have shown a partial contemporaneity between the last part of the Late Borġ in-Nadur production and that of Baħrija (trench H2 at Borġ in-Nadur: 939-837 cal BC; Eastbound trenches, layer 5 at Baħrija: 860-807 cal BC) and likely the continuation of the Baħrija production until the middle of the 8th c. BC.

Taking into consideration all the factors discussed, it is possible to offer an updated comparative chronology layout and argue that the Maltese-type materials found at Thapsos can be dated around the middle of the 9th c. BC, between the end of the Cassibile facies and the beginning of the South Pantalica facies in Sicily, corresponding to the Transitional Phase between Late Borġ in-Nadur and Mature Baħrija periods (see chapter 3, Table 3).

6. Conclusions

The study of a group of unpublished vessels from the Paolo Orsi Archaeological Museum of Siracusa

has been instrumental in triggering the reappraisal of the evidence of those materials traditionally considered as Borġ in-Nadur and Baħrija-type from the later reoccupation phase of the Middle Bronze Age Complex A and B at Thapsos. The lack of precise information about their context of provenance and the fact that, besides a series of succinct reports, the excavations carried out at the settlement of Thapsos are still unpublished and the materials unstudied, makes it pointless to try to interpret the significance of such a reoccupation and consequently the role played by the Maltese-type materials in it. Furthermore, without specific archaeometric analyses aimed at establishing whether those materials are imports from Malta or local imitations, such interpretative exercise becomes even more futile. However, one important fact which deserves to be highlighted is that the scale of the phenomenon of interrelations between Malta and Sicily in this period was definitely much larger and more complex than what the evidence discussed here shows, as demonstrated by the discovery of Final Bronze Age and Early Iron Age Sicilian artefacts in Malta and through the several Maltese pottery types of Late Borġ in-Nadur style from the settlement of Thapsos in display at the Paolo Orsi Archaeological Museum of Siracusa, which remain still unpublished.

The outcomes of this study bring along some interesting implications: 1) The reassessment of the Maltese-type materials from the four areas of the Thapsos settlement have proved that none of them belong to the Baħrija style, but they are more precisely of Late Borġ in-Nadur type with some initial elements of the style which will be configured later as that of Baħrija; 2) The local pottery associated with them are more likely to be dated to a transitional period between Cassibile and South Pantalica, rather than to the Cassibile facies, and they show some stylistic residual influxes from the Ausonian II phase; 3) The full development of the Baħrija style, which has been considered to be subsequent to the Late Borġ in-Nadur phase both on the basis of stratigraphic observations at the site of Tas-Silġ and of the new radiocarbon data, mostly runs in parallel with the Sicilian South Pantalica facies.

More importantly, the presence of Late Borġ in-Nadur/Baħrija-type pottery at Thapsos, marks the last moment in which Maltese materials appear in Sicily, as until now no clear Baħrija style materials have been identified. It is the last stage of a complex and tight relationship that lasted, with ups and downs, for the entirety of prehistory. Symptomatically, this moment corresponds with the last phase of use of hut 2 at Borġ in-Nadur, before the complete abandonment of the settlement, and the beginning of a substantial occupation at the site on Qlejġħa tal-Baħrija, where

later the Late Borg in-Nadur pottery will be gradually replaced by the Mature Bahrija pottery.

The presence of Sicilian-type materials at Qlejgha tal-Bahrija, in particular the strainer spouted jars typical of North Pantalica and Cassibiles facies (Vella *et al.* 2011) should be probably be considered parallel to the initial occupation of the site characterized by the Late Borg in-Nadur/Transitional Phase, still contemporaneous with the last portion of the Cassibile period. In some way, this evidence could represent the counterpart of the evidence discussed from Thapsos. The discovery of the double spiral bronze fibule and of the plumed ware associated with Bahrija pottery at Tas-Silġ could probably assume the same value.

Are all these events connected? And what did eventually cause such a chain reaction? The abandonment of the site of Borg in-Nadur, which represented for millennia a major cultural center, by the temple first and by the fortified village later, would have certainly had repercussions on the external projections of the Maltese culture.

Is the contextual emergence of a new pottery style – that of Bahrija – known so far predominantly at the eponymous site in the Maltese Archipelago, a hint of what triggered the abandonment of Borg in-Nadur, the end of contact with Sicily and the establishment of the new settlement at Bahrija? The striking similarities between the Proto-Elymian pottery of western Sicily and the Bahrija style is an argument which has been successfully used to explain the discontinuity between Borg in-Nadur and Bahrija pottery (Tusa, 1992; Vella *et al.* 2011, p. 267), which was already a well-known issue in Maltese prehistory (Evans 1971, pp. 227-228). A discontinuity that took shape gradually, with the slow and progressive transformation of the Late Borg in-Nadur pottery into the Bahrija-types under the pressure of external influxes, that we are now aware of. Was a mass migration to Malta the event that changed the scenario opening a new cultural season before the arrivals of the Greeks in Sicily and of the Phoenicians in the Maltese Archipelago?

Unfortunately, with the current data at our disposal and without fresh inputs from new excavations in the Proto-Elymian sites of western Sicily and serious on-site investigation at Qlejgha tal-Bahrija, such a Gordian knot is destined for now to remain firmly tied.

Endnotes

In table 9.3 at p. 274 of Vella *et al.* 2011, in the first line the context of quadrant XLIX/31 was erroneously presented as LI/31 (line 1 of the table) and the context of XLVII/33 was erroneously indicated as XLVIII/33.

References

- Alberti, G. 2007. Minima Thapsiana. Riflessioni sulla cronologia dell'abitato di Thapsos, *Rivista di Scienze Preistoriche* 57, pp. 363-376.
- Bernabò Brea, L. 1970. Thapsos. *Primi indizi dell'abitato dell'età del bronzo*, in V. Miroslavjevic, D. Rendic-Miocevic, M. Suic (eds), *Adriatica praehistorica et antiqua: miscellanea Gregorio Novak dicata*, Zagabria: Arheološki institute, pp. 139-151.
- Cazzella, A., Recchia, G. 2008. Maltese late prehistoric ceramic sequence and chronology: on-going problems, in C. Sagona (ed.), *Beyond the Homeland: Markers in Phoenician Chronology*, (Ancient Near Eastern Studies Supplement 28), pp. 373-395. Leuven: Peeters.
- Jones, R., Levi, S. T., Bettelli, M., Vagnetti, L. 2014. Italo-Mycenaean Pottery: Archaeological and Archaeometric Dimensions, *Incunabula Graeca* 103, Roma: CNR – Istituto di Studi sul Mediterraneo Antico.
- Leighton, R. 1993. *The Protohistoric Settlement on the Cittadella*, Princeton: Princeton University Press.
- Leighton, R. 2019. *Pantalica in the Sicilian Late Bronze and Iron Ages*, Oxford: Oxbow.
- MAR 1955-1956 = Annual Report of the Museum Department, Malta, p. 10.
- Raneri, S., Barone, G., Mazzoleni, P., Tanasi, D., Costa, E. 2015. 'Mobility of men versus mobility of goods: archaeometric characterization of Middle Bronze Age pottery in Malta and Sicily (15th-13th century BC)', *Periodico di Mineralogia* 84.1, pp. 23-44.
- Tanasi, D. 2008. *La Sicilia e l'arcipelago maltese nell'età del Bronzo Medio*, Palermo: Officina Studi Medievali.
- Tanasi, D. 2010. Bridging the gap. New data on the relationship between Sicily, the Maltese Archipelago and the Aegean in the Middle Bronze Age, in *Mare Internum* 2, pp. 111-119.
- Tanasi, D. 2011. The Prehistoric Pottery, in D. Tanasi, N.C. Vella (eds), *Site, Artefacts, Landscape: Prehistoric Borg in-Nadur*, Malta, Monza: Polimetrica, pp. 71-158.
- Tanasi, D. 2014. Uniti e divisi dal mare. Mobilità di uomini e merci tra la Sicilia e l'arcipelago maltese nel II millennio a.C., in M. Congiu, C. Micciché, S. Modeo (eds), *Viaggio in Sicilia. Racconti, segni e città ritrovate*, Atti del X Convegno di Studi sulla Sicilia Antica, Caltanissetta 10-11 Maggio 2013, Caltanissetta: Sciascia, pp. 99-116.
- Tanasi, D. 2015. The pottery from the excavation campaign of David H. Trump (1959) at the settlement of Borg in-Nadur, in D. Tanasi, N. C. Vella (eds), *The late prehistory of Malta: essays on Borg in-Nadur and other sites*, Oxford: Archaeopress 2015, pp. 35-98.
- Tusa, S. 1992. Le fasi formative della cultura elima alla luce di recenti rinvenimenti, in *AA.VV.*, *Giornate*

- Internazionali di Studi sull'Area Elima, Gibellina 19-22 Settembre 1991, Scuola Normale Superiore di Pisa: Pisa, pp. 603-615.
- Vella, N. C., Tanasi, D., Anastasi, M. 2011. Mobility and transitions: the south central Mediterranean on the eve of history, in D. Tanasi, N. C. Vella (eds), *Site, Artefacts, Landscape: Prehistoric Borg in-Nadur*, Malta, Monza: Polimetrica, pp. 251-282.
- Voza, G. 1973. Thapsos: resoconto sulle campagne di scavo del 1970-71, in *Atti della XV riunione scientifica dell'Istituto Italiano di Preistoria e Protostoria*, Firenze: I.I.P.P., pp. 133-157.
- Voza G. 1980-981. L'attività della Soprintendenza alle Antichità della Sicilia Orientale. Thapsos, in *Kokalos* 26-27, II,1, pp. 675-680.

Chapter 11.

The Tas-Silġ sanctuary between the late 2nd and the early 1st millennia BC

Alberto Cazzella, Giulia Recchia

1. Introduction

The site of Tas-Silġ was extensively unearthed during the 1960's by the Italian Archaeological Mission in Malta (Figure 1). Excavations were chiefly focussed on the Historic phases of the sanctuary (Phoenician-Punic and Hellenistic-Roman). Between 1996 and 2005 the University of Malta carried out excavations in the southern part of the site (Bonanno and Vella 2015), while in 1995 the Italian Mission resumed explorations in the northern part (Rossignani 2009). The sanctuary represents an extraordinary case of long-lasting use of a cult place from the 3rd millennium BC to the Byzantine period (Ciasca 1976-77; Amadasi Guzzo 2011; Rossignani 2009; Bonzano 2017).

Field research, especially aimed at investigating the prehistoric phases of the sanctuary, were carried out by the Sapienza University and Foggia University research units of the Italian Mission in the northern part of the site between 2003 and 2011 (Cazzella and Recchia 2012). Bringing to light hidden megalithic structures and well preserved stratigraphic sequences, these explorations have provided new insights on the complex system of Late Neolithic megalithic buildings and its transformations and patterns of use up to the first phase of contact with the Phoenicians (Cazzella *et al.* 2016). In particular, primary deposits belonging to the late 2nd – early 1st millennia BC have been explored in various areas of the site, producing new data on both the chronological and cultural sequence in Malta during this period (see Bonanno 2013; Recchia and Cazzella 2011; Tanasi 2015) and interactions with the central-eastern Mediterranean. Here, we will specifically discuss these two subjects.

Key issues with regards to the chronological and cultural sequence appear to be: 1) the end of the Borġ in-Nadur period and the beginning of the Baħrija period; 2) the identification of characterising pottery features of the Baħrija period; 3) the first contacts with the Phoenicians.

We are inclined to consider Borġ in-Nadur and Baħrija as two distinct chronological periods rather than just different stylistic features in pottery (as proposed by

Trump 1961; 2002, p. 274) and therefore we will use these terms accordingly. Nonetheless, as we shall see, distinct pottery productions of the Borġ in-Nadur period (hence Borġ in-Nadur type pottery) often occur in Baħrija deposits, either as residual shards or as productions still in use in this later period. Thus, we will also use the terms 'Borġ in-Nadur type pottery' and 'Baħrija-type pottery' to indicate specific stylistic features. As far as the absolute chronology of these periods is concerned, including the possibility to single out some phases within the Borġ in-Nadur period (Copat *et al.* 2012), we have promoted a program of radiocarbon dating at Tas-Silġ North, the results of which are forthcoming. In any case, cross-dating is a viable means to obtain both a chronological framework that can be further refined, and assess cross-cultural interactions. Thus, we propose a correspondence between the Sicilian and Maltese Late Bronze Age – early Iron Age sequences, mostly based on the evidence of contacts between the two regions in these periods. Thus, the late Borġ in-Nadur phase may correspond to the Recent Bronze Age in Sicily (approximately 1250-1050 BC), while the Baħrija period to the Final Bronze Age (1050-850 BC) and the early Iron Age (850-730 BC) in Sicily. Early contacts with the Phoenicians are widely thought to have occurred in the late 8th c. BC (*contra* Sagona 2014).

2. The late Borġ in-Nadur phase (mid-13th – mid-11th centuries BC)

The identification of phases within the Borġ in-Nadur period is not straightforward due to the scarcity of excavations carried out according to modern standards and of undisturbed stratigraphic sequences.

On the basis of the stratigraphic sequence at Tas-Silġ North and the analysis of the pottery (based on quantitative analyses and the incidence of specific features) we have proposed to single out three phases within the Borġ in-Nadur period and in particular to distinguish a late phase from a 'classic' phase (Recchia and Cazzella 2011; Copat *et al.* 2012). Tanasi's recent reappraisal of the pottery assemblage from the settlement of Borġ in-Nadur has provided supporting evidence for this hypothesis (Tanasi 2015, pp. 87-89).

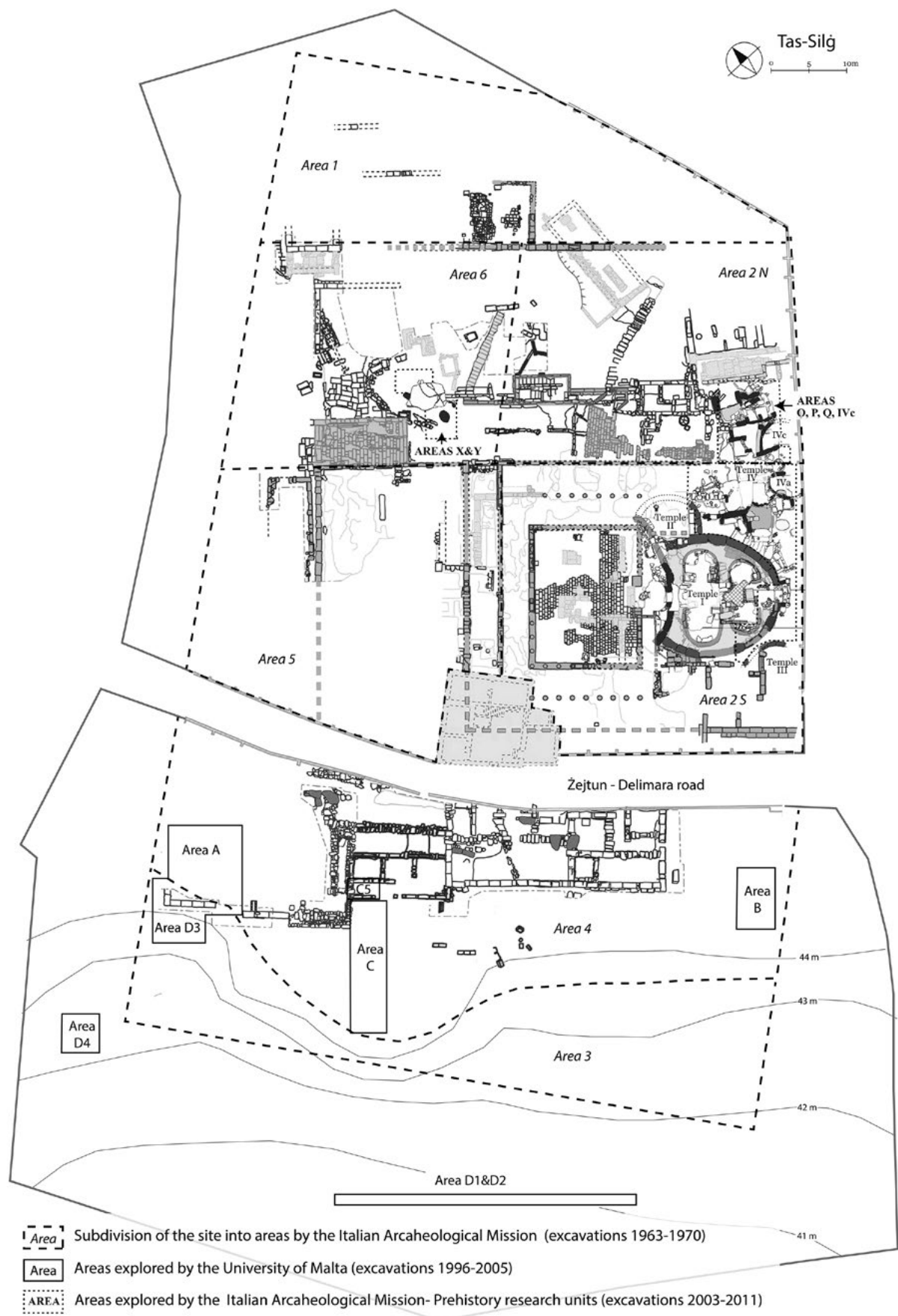


Figure 1. Tas-Silg (Malta). General plan of the site showing the areas explored by the Italian Archaeological Mission (excavations 1963-1970 and 2003-2011) and the University of Malta (excavations 1996-2005). (Modified from Bonanno and Vella 2015, fig. 1:3; Cazzella and Moscoloni 2004-2005, fig. 1).

As is well known, ‘classic’ Borġ in-Nadur pottery occurs in Sicilian contexts belonging to the local Middle Bronze Age (Thapsos – Milazzese), thus dating to the 14th – mid-13th centuries BC. Therefore, the late Borġ in-Nadur phase is likely to have begun after the mid-13th c. BC (of the same opinion as Tanasi 2015, p. 92). As far as the general terminology is concerned, labelling Borġ in-Nadur as (Maltese) Late Bronze Age may appear as an incongruity, especially in comparison with Sicilian terminology. Yet, the Maltese Bronze Age is generally subdivided into two main periods (instead of three or more): the Tarxien Cemetery period, labelled as Early Bronze Age and the Borġ in-Nadur period, inevitably labelled as Late Bronze Age due to the lack of a third intermediate period.

One of the main distinguishing features of the late Borġ in-Nadur ceramic productions is the high incidence of brownish and dark slipped surfaces, whereas the ‘classic’ Borġ in-Nadur pottery is chiefly characterised by red-slipped surfaces. Specific shapes and decorative patterns occurring in the late Borġ in-Nadur phase (Figure 2) appear to be: curvilinear bowls and pedestalled hemispherical bowls decorated with a series of little knobs, both with strap handle; globular or heart-shaped jars with conical or cylindrical necks; ovoid jars with no distinct neck and a deeply incised line on the shoulder; trays with concave tronco-conical walls or slightly inverted rims (see Copat 2018). A type of decoration particularly characterising late Borġ in-Nadur pottery productions appears to be the fine and closely-spaced incisions forming triangles and zigzags, sometimes associated with small knobs (Copat *et al.* 2012, pp. 58-60, Figure 8).

The lower chronological limit of the late Borġ in-Nadur phase and the transition with the Bahrija period is more difficult to define. At Tas-Silġ in particular, owing to the unbroken occupation of the site, the high incidence of residual Borġ in-Nadur shards in the Bahrija deposits on the one hand, and the endurance of some distinct ceramic productions on the other hand, makes it problematic to clearly distinguish this transition, as we will discuss below in detail.

Dribbled Ware is a very characteristic ceramic production that does not have precise parallels outside the Maltese archipelago and exact chronology of which is still matter of debate (Figure 3, 1-2). This distinct pottery production appears to have started already in the late Borġ in-Nadur phase (Tanasi 2008-2009; 2015): indeed at Tas-Silġ North it occurs in both Late Borġ in-Nadur and Bahrija deposits. At Tas-Silġ South fragments of Dribbled Ware (Sagona 2015, fig. 1:19:8-13) are stratigraphically associated with a wheel-made painted shard that has been proposed to pertain to a LH IIIB Mycenaean production (SU 2169, Sagona 2015, pp. 81, 82, fig. 1:121:7), thus constituting a chronological reference for the Maltese painted ware. However, the actual nature and provenance of the wheel-made painted shard has yet to be verified. According to M. Bettelli (pers. comm.), assuming that this is a Mycenaean-type production it may well belong to the LH IIIC rather than to the LH IIIB. Therefore, the context could be dated to the 12th-11th centuries BC (see also the discussion below). Thus, the production of Dribbled Ware might have started in a very late phase of Borġ in-Nadur and then continued in the following Bahrija period.

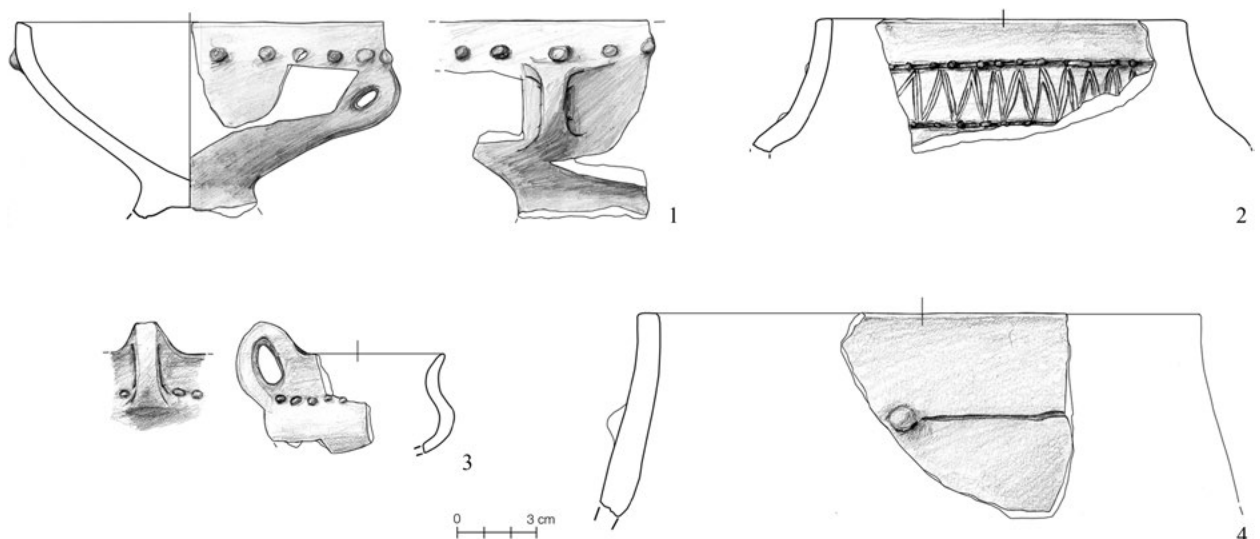


Figure 2. Tas-Silġ, Late Borġ in-Nadur pottery from the North side of the site (excavations 2003-2011). 1: pedestalled bowl decorated with small knobs; 2: jar decorated with fine zigzag incisions and small knobs; 3: small cup decorated with small knobs; 4: jar decorated with incised line and small knob (after Copat *et al.* 2012).

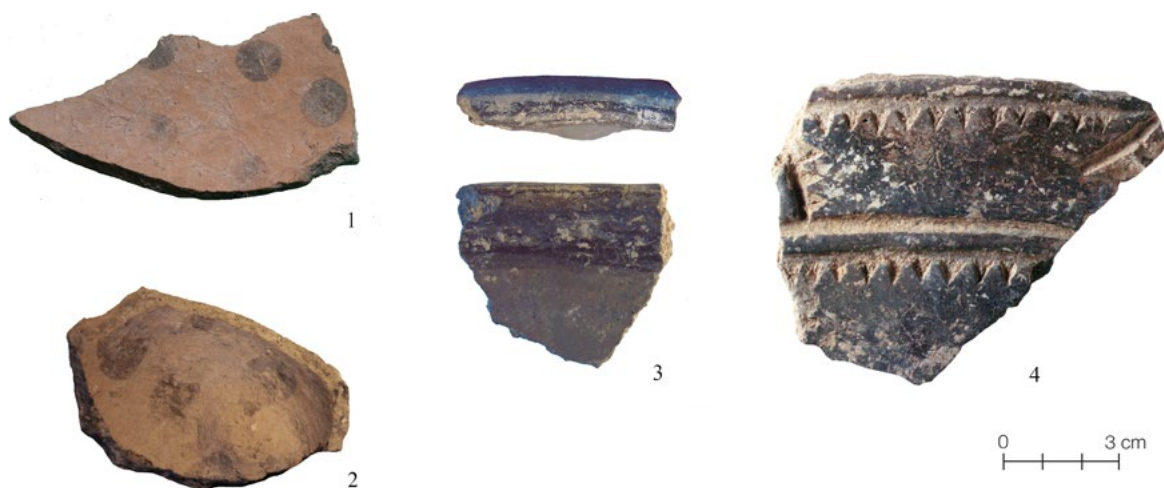


Figure 3. Tas-Silġ, Dribbled Ware and Bahrija pottery. 1-2: Dribbled Ware (North side, excavations 2003-2011); 3: bowl with painted band on the rim (North side, excavations 2003-2011); 4: sherd with excised decoration (excavations 1963-1970), (Photos Italian Archaeological Mission).

2.1 The Tas-Silġ sanctuary in the late Borġ in-Nadur phase

The occupation of the Tas-Silġ sanctuary appears to have been particularly intense during the latest phase of the Borġ in-Nadur period (Figure 4). Apart from the areas affected by plundering and disturbances in modern times, late Borġ in-Nadur deposits were found in the vast majority of structures and spaces explored with the 2003-2011 excavations (which focused on the prehistoric phases). As is well known, prehistoric deposits inside temple I were cleared by the subsequent use of the building in Historic times, but this must have been still standing during the Late Bronze Age/early Iron Age and doubtlessly used, possibly retaining a symbolic character (Cazzella and Recchia 2012; 2016).

Late Borġ in-Nadur primary deposits have been found in both the unearched apses of temple IV (IVa and IVc), which possibly maintained the original Late Neolithic outline. This evidence might strengthen the hypothesis that most of the original megalithic buildings were still standing and occupied in this period without major architectural transformations, although in several areas the floors were raised from the original level and the roofing was possibly replaced. Nevertheless, some minor changes were made, as structural evidence in area M indicates.

Here a small wall was built, made by three adjoining blocks, which closed this small room isolating it from the courtyard E (Cazzella and Recchia 2012, fig. 8) (Figure 4.). Further late Borġ in-Nadur deposits were preserved just north of temple IV (areas O and Q) and in the area located 40 m to the West of the main cluster of megalithic buildings (areas X & Y), where a megalithic structure, possibly a dolmen, had been raised in the Tarxien Cemetery period (Cazzella and Recchia 2015,

151, figs 6 and 10). In all of these areas (O, Q, X & Y), as well as in apse IVc, Bahrija layers were preserved above the late Borġ in-Nadur deposits.

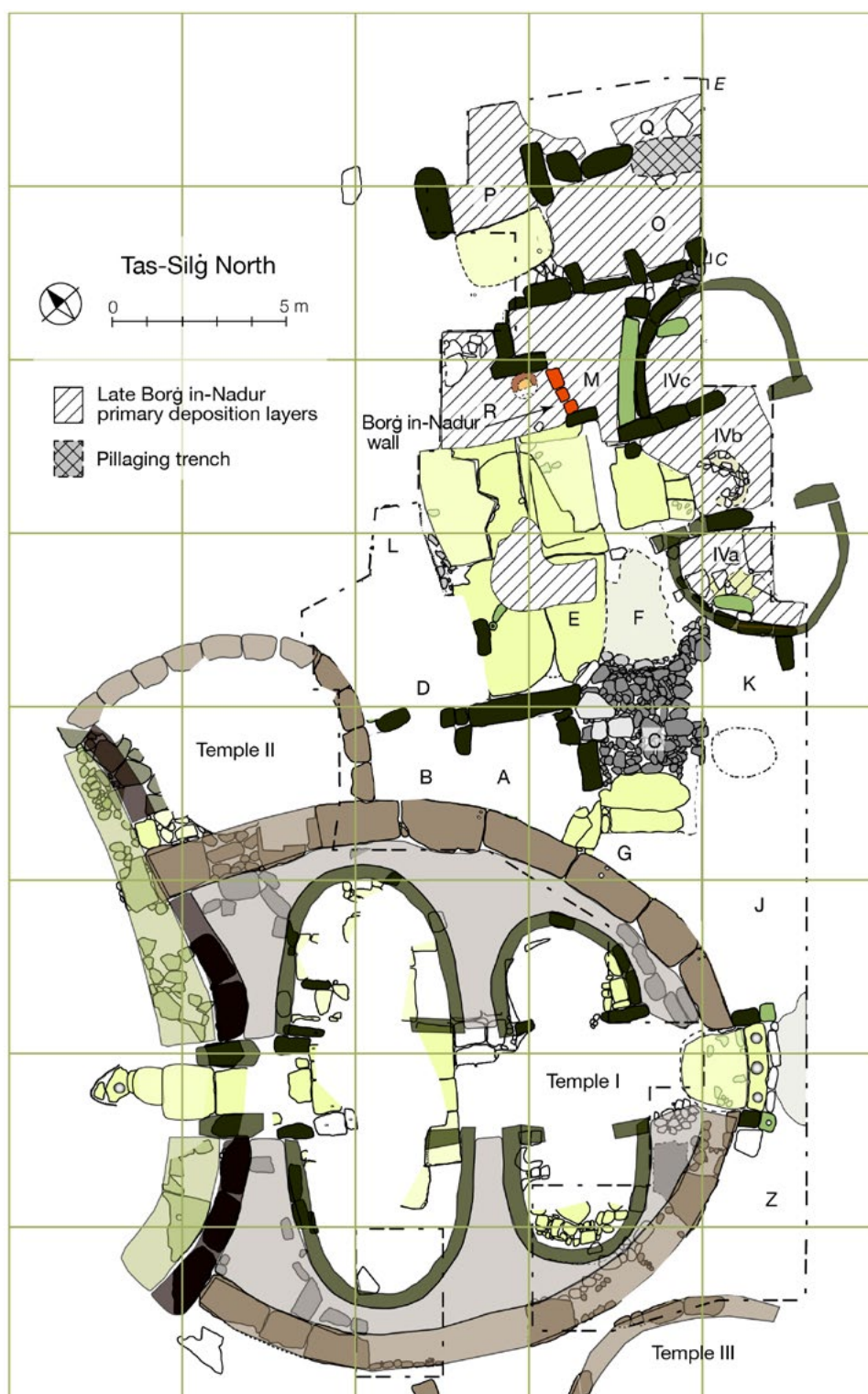
The University of Malta's excavations in the southern area of the Tas-Silġ sanctuary have brought to light primary deposition layers belonging to the Borġ in-Nadur period particularly in area C (fig. 1; Vella *et al.* 2015, fig. 3:200). According to C. Sagona pottery from these layers would pertain to Trump's 2BI phase and they would date from the 1500-1450 to 1000 BC rather than just to a late phase of this period (Sagona 2015, pp. 22, 27)

Nonetheless, the pottery assemblage from stratigraphic groups C3, C4 and C6 (Borġ in-Nadur phase III in the phase-sequence proposed for Tas-Silġ South; Vella *et al.* 2015) includes distinct pottery types that, in our opinion, came into use in the late Borġ in-Nadur phase, such as the Dribbled Ware (see discussion above) and the motifs with fine and closely-spaced incisions forming triangles and zigzags (Sagona 2015, fig. 1:12:9). Moreover, the shard reportedly of Aegean-Mycenaean type from one of the layers of group CG3 (SU 2169), does not constitute strong evidence for an earlier chronology. Having said that, these deposits may well indicate that the late Borġ in-Nadur occupation of the site not only encompassed the core area of the sanctuary, but also its southern fringe.

2.2 Evidence of maritime contacts and exchange with Mediterranean contexts

Various finds from Tas-Silġ and other Maltese contexts possibly belonging to the late Borġ in-Nadur phase illustrate the participation of the Maltese archipelago in the broader Late Bronze Age Mediterranean maritime networks.

Figure 4. Tas-Silġ, north-east side of the site (excavations 2003-2011). General plan of the prehistoric structures with indication of the extension of primary deposition of Late Borg in-Nadur layers. Lighter shades indicate the suggested reconstruction of some features.



Being the westernmost find of a 2nd millennium BC cuneiform inscription, the fragment of inscribed agate from Tas-Silġ is of exceptional importance (Cazzella *et al.* 2011). In all likelihood the agate fragment is part of a lunar crescent (Figure 5); the inscription has been deciphered and translated by Fr Werner Mayer (2011) of the Pontificio Istituto Biblico. On the basis of both the types of characters and names of the dedicants,

Mayer has suggested that the inscription dates to the Kassite period, between 1330 and 1230 BC. The dedicants' names also suggest that the object was made in Nippur (Mesopotamia). The agate fragment has been found in the northern area of the Tas-Silġ sanctuary as a residual object in the substrate layer (SU 10786) of a *torba* floor, probably dating to the 2nd-1st centuries BC. Specifically, this chronology has been suggested

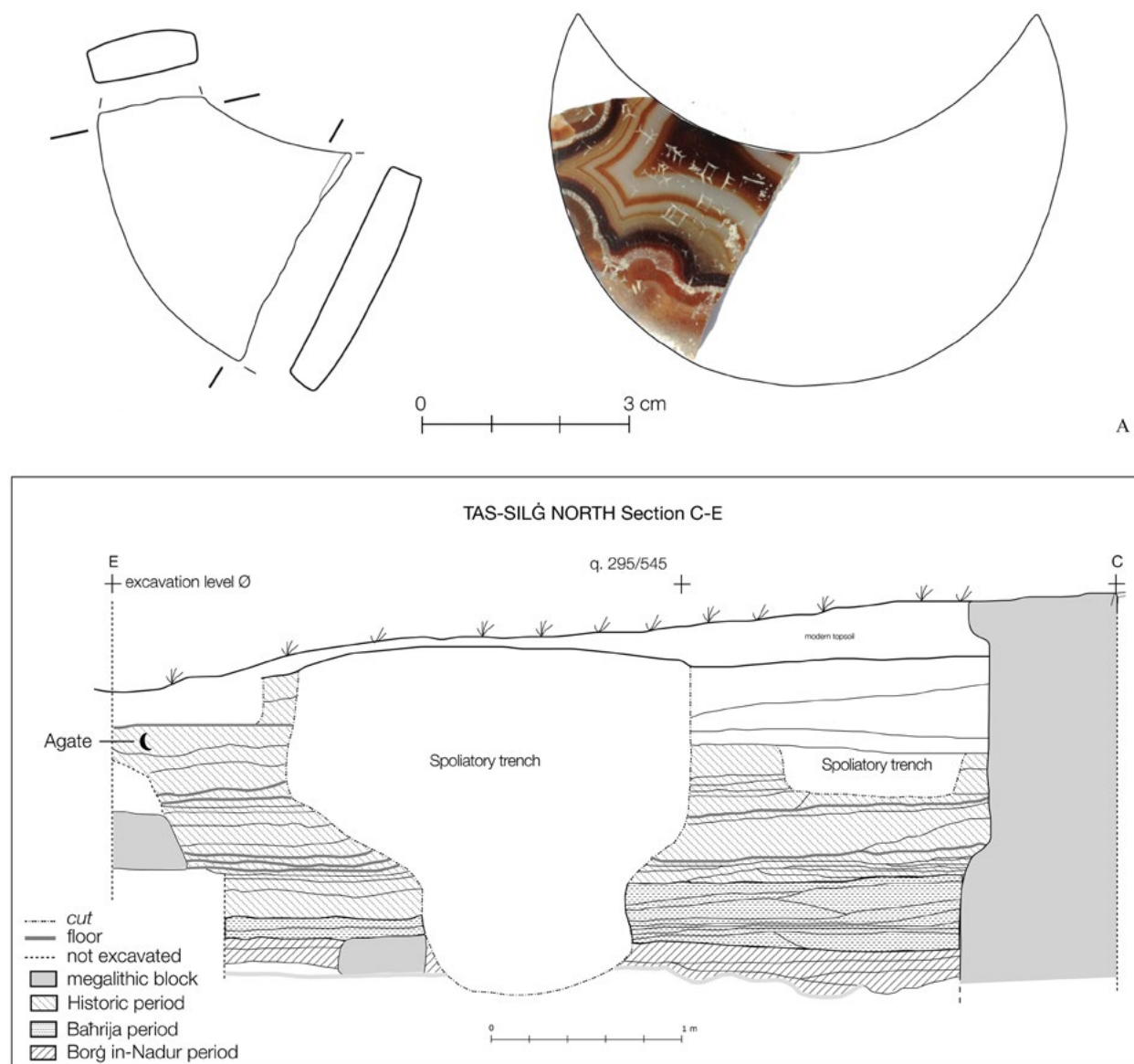


Figure 5. Tas-Silġ, north-east side of the site (excavations 2003-2011). A: Lunar crescent with cuneiform inscription made of agate; B: section C-E showing the stratigraphic position of the agate crescent (Photo Italian Archaeological Mission).

by G. Semeraro, A. Saponara and F. Notarstefano on the basis of the pottery types from the same layer and associated deposits. Hence this was not its primary deposition context and we have little evidence to date the arrival of the agate crescent in Malta. Nonetheless, in our opinion it is unlikely that the crescent arrived in the island in the Phoenician-Punic period, between the late 8th and the 4th centuries BC. Once the new cultic cycles had begun at Tas-Silġ (Phoenician-Punic and then Hellenistic-Roman), a precious object of that sort, possibly re-dedicated in the Maltese sanctuary, would have been hardly discarded as waste.

The problem remains as to how the agate arrived in Malta. In all likelihood, enemies of the Babylonians took it away from the temple of Nippur, where it had

been originally dedicated. In dealing with this issue, Fr Mayer (2012, p. 95) pointed out another peculiar find that entails a link between the Mediterranean (the eastern part in this case) and Mesopotamia: the occurrence of votive cylinder seals made of semi-precious stones (chiefly lapis lazuli) inside a building dating around 1220 BC at Thebes in Greece. The most recent among these seals belong to the Kassite period too, thus from Babylonia they would have reached a Greek Mycenaean centre in a few years. E. Porada (1981-1982) has highlighted how during the invasion of Babylonia the Assyrian king Tukulti-Ninurta took away as spoils a number of sacred objects. According to Porada, after that the abovementioned (stolen) cylinder seals arrived in Greece quickly, as gifts from the Assyrian king to the Mycenaean princes, who were

potential allies against the Hittites. It is tempting to hypothesise that the agate crescent found at Tas-Silġ first arrived in Greece via the same chain of events. From Greece, then, it could have reached the central Mediterranean by way of either Mycenaean or Cypriot maritime exchange activities, in which Sicily was at that time deeply involved. That (inscribed) artefacts of Near Eastern provenance circulated through the eastern Mediterranean exchange networks is also attested by an ivory plaque with cuneiform inscription, dating to the late 13th c. BC, which has been found at Tiryns. This is likely to have come from Ugarit, and C. Cohen, J. Maran and M. Vetters (2010) have suggested that its arrival in Greece was due to the Cypriot or Levantine exchange network with the Peloponnese.

The presence of an exotic object such as the inscribed agate in a Maltese sanctuary of the Late Bronze Age may not have been accidental. In Malta the inscription was probably not understood by the users of the sanctuary who, on the other hand, may have appreciated the value of the raw material and the quality of its craftsmanship. Being the recipient of such a singular object during the Late Bronze Age, the sanctuary of Tas-Silġ may have had a reputation that was broader than local knowledge, as would be the case later in both the Punic and Roman periods.

Given the crisis that the Mycenaean world underwent in the late 13th – early 12th centuries BC, other human groups coming from the Mycenaeanised eastern Mediterranean regions rather than the Mycenaeans themselves might have been the main actors in Mediterranean exchange networks. In this framework Cyprus, which was also connected with Crete, probably played a central role in trading with Sicily and Sardinia and, as mentioned above, could have had a role too in the shipping of the agate crescent to the central Mediterranean. Recently, Russell and Knapp (2017) expressed criticism about the assumption of Cypriot sailors being the prominent and active actors in the network with Sardinia. Nonetheless, at present little evidence supports the reverse hypothesis that the Sardinian sailors had a far more active role in relationships with Cyprus (Cazzella and Recchia 2018).

In Sicily, the fine wheel-made Mycenaean-type pottery, highly appreciated in the Middle Bronze Age, seems to have lost appeal after the mid-13th c. BC. This does not mean that the relationships between the eastern Mediterranean and the island had ceased, but the provenance of the exotic goods that arrived in Sicily is more difficult to be traced. In fact, an array of productions, objects and raw materials attests the involvement of Late Bronze Age Sicily in the Mediterranean network. These include the

production of wheel-made plain red-slipped pottery imitating some Mycenaean pottery shapes (Pantalica, Montagna di Caltagirone), gold craftworks (Pantalica), metal vessels (Caldare, Monte Campanella, Contrada Capreria) – which are debatable in chronology but can be placed between the Middle and the Late Bronze Age – mirrors (Pantalica), fragments of ox-hide ingots (Lipari, Ustica, Thapsos and Cannatello) – probably falling between the Middle and the Late Bronze Age – and ivory objects, such as the mirror handle from Pantalica and daggers from Dessucri that have been attributed to the Late Bronze Age (Albanese Procelli 2012, pp. 196-198, 216; 2013, pp. 111-113; Albanese Procelli and Chilardi 2005, p. 99; Bietti Sestieri 1979, pp. 608-610; Castellana 2000, 212-237; Lo Schiavo *et al.* 2009, pp. 135-221; Panvini 2005). Moreover, the so-called *anaktoron* at Pantalica is thought to have been inspired by eastern models (Militello 2004, p. 322). Among these elements both the ox-hide ingots and metal vessels are possibly of Cypriot provenance, although their chronology is still a matter of scholarly debate (Lo Schiavo *et al.* 2009; Tanasi 2009; Vagnetti 1968).

Relevant to the subject of the relationships between Sicily and Malta is the bone necklace spacer decorated with incised multiple circlets from a late Borg in-Nadur layer at Tas-Silġ North (Figure 6; Cazzella and Recchia 2012, p. 34). Although the spacer is not chronologically indicative, both the technique and pattern of decoration closely recall bone and antler craftworks (including necklace spacers) widespread in Sicily – and in Late Bronze Age peninsular Italy as well (Provenzano 1997). In particular, good parallels can be found among the grave goods of the Final Bronze Age cemetery at Madonna del Piano (eastern Sicily – Albanese Procelli 2003, p. 108; Albanese Procelli and Chilardi 2005, p. 97). In Malta, this distinctive incised decoration with multiple circlets also occurs on a bone hilt from Ghar Mirdum, that according to D. Tanasi (2014, figs 17 c, 18 a, b), could date to the Early Bronze Age.

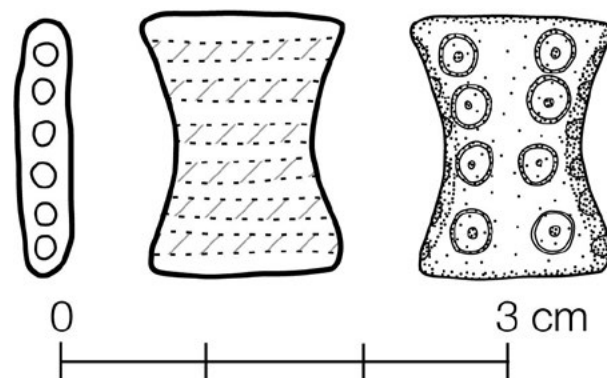


Figure 6. Tas-Silġ. Decorated bone necklace spacer from a Late Borg in-Nadur layer (North side, excavations 2003-2011; authors' drawing).

If we are to judge by the Maltese pottery imports in Sicily, it would seem that the relationships between Sicily and Malta were not particularly intense in this period, but future archaeological research might rapidly change this picture. Being associated with LH IIIA-IIIB Mycenaean pottery imports, the vast majority of the Borġ in-Nadur pottery from the tombs in south-eastern Sicily appear to belong to the late 14th – early 13th c. BC (Tanasi 2008). Results of the excavations at the settlement of Thapsos are largely unpublished, so we have little evidence to verify the chronological sequence of the site and the contexts of the provenance of the finds. According to G. Voza (1992), the construction and use of the multicellular rectilinear buildings (buildings A and B) would date to the 13th – 12th c. BC, although some scholars disagree with this proposal. Some late Borġ in-Nadur pottery is possibly associated with these buildings, such as the two bowls with T-shaped handle from surface layers of the central building area (Voza 1973, pp. 44–45, ns. 139–140, Recchia and Cazzella 2011), while the Borġ in-Nadur pottery from complex A is not described (Voza 1972, p. 185).

In the light of the dearth of Mycenaean type pottery in Sicily in the late 13th – 12th c. BC (and possibly the reduction of direct Mycenaean contacts with the island), the paucity (if not lack) of Aegean – Mycenaean pottery in Malta in this period is not unexpected. The only occurrence would be the possible LH IIIC Mycenaean-type shard from Tas-Silġ South (discussed above), whose actual nature and chronology are yet to be verified. Unlike in Sicily, Maltese pottery productions imitating the shapes and/or replicating the manufacturing techniques of the Mycenaean-type vessels do not seem to occur. This is not surprising, however, since in the previous period Mycenaean-type pottery is extremely scarce in Malta, only consisting of the well-known LH IIIA2-IIIB Mycenaean type shard from Borġ in-Nadur (Pace 2004, pp. 211–212). Although this example has been recently analysed through PXRF (Pirone and Tykot 2017, p. 218; see chapter 7) and the results indicate its local production, this appears to conflict with the lack of wheel-made painted pottery in Malta in that period (*contra* Tanasi in chapter 3). Supplementary analyses such as NAA would be useful to ascertain the actual provenance of this sherd.

Although available data illustrating the occurrence in the Maltese islands of exotic goods between the 14th and the 12th centuries BC is far more limited than in Sicily, it cannot be ruled out that the archipelago was either directly or indirectly involved in the eastern Mediterranean exchange network. For instance, D. Tanasi (2009) has pointed out the presence of a possible metal vessel at Borġ in-Nadur (area of the former Late Neolithic sanctuary). Two, possibly imported, gilded bronze bracelets also come from this site (Evans 1953, p. 72; Tanasi 2009, p. 16).

3. The Bahrija period (mid-11th – 8th centuries BC)

3.1 The desertion of Malta around 1000 BC: an unlikely hypothesis

Already in 1970 M. Cagiano *et al.* (1973, p. 100) pointed out the continuous occupation of the Tas-Silġ sanctuary during the 9th–8th centuries BC, highlighting the stratigraphic association of Borġ in-Nadur/Bahrija pottery and imported Phoenician types.

Other authors have been critical about this hypothesis of continuity, suggesting instead that at the threshold of the 1st millennium BC the Maltese archipelago was virtually deserted. For instance, in 1993 P. Brusasco suggested that: ‘...when the first Semites settled in the prehistoric centres, they did not live side by side with the local inhabitants; rather they built their settlements on top of the abandoned predating centres’ (*Quando i primi semiti si insediarono nei nuclei preistorici, lo fecero senza convivere con le genti locali e anzi in genere sovrapposero i loro stanziamenti su quelli più antichi già in disuso*) (Brusasco 1993, p. 16).

Brusasco based this hypothesis chiefly on the results provided by the 1960’s Italian excavations at Tas-Silġ. He considered ‘the archaic Phoenician presence [at Tas-Silġ], that is that of the first colonists, ...rather limited’... ‘whereas, the passage from the Borġ in-Nadur/Bahrija period and the full Phoenician-Punic period of the 7th–6th centuries BC is evident across the entire sanctuary...’ (*la presenza fenicia arcaica, quella cioè dei primi coloni, ...abbastanza modesta* ... ‘In tutto il santuario è invece evidente il passaggio dal periodo Borġ in-Nadur/Bahrija al pieno periodo Fenicio-Punico del VII–VI secolo a.C.’) (Brusasco 1993, p. 15).

A few years later, Vidal Gonzalez (1998) reaffirmed the hypothesis that Malta was nearly deserted by the time the Phoenicians colonised it. He confuted the validity of the chronological association between the Borġ in-Nadur pottery and a Phoenician lamp in the dump deposits filling the Mtarfa pit (Ward Perkins 1942), as well as the validity of analogous associations acknowledged by scholars dealing with this subject. A critical attitude towards a too broad use of the concept of ‘association’ is certainly beneficial, especially when it comes to archaeological contexts where the risk of accidental associations between materials of different phases is high, such as long-lasting sites. Moreover, it is difficult to prove the concurrence between two extremely diversified cultural aspects, whose chronology is not well defined, in contexts lacking in reliable stratigraphic sequences. Notwithstanding this, what is unconvincing in Vidal Gonzales’ proposal is the historical implications he seeks to draw from this attempt to prove the inconsistencies in the overlapping or quick succession between a local traditional cultural

aspect (Borġ in-Nadur/Bahrija) and a new one of Levantine origin (Phoenician). As G. Semeraro (2002) and A. Pace (2004, p. 201) have rightly pointed out, why would the Maltese archipelago have been suddenly deserted after millennia of unbroken occupation?

It is true that, for instance, L. Bernabò Brea (1958, p. 143) underlined the desertion of the Aeolian Islands between the end of Ausonian II, around 850 BC, and the Greek colonisation of the archipelago in 580 BC, suggesting a violent war event as a cause for this long gap in the settlement of the archipelago. Even assuming that this was actually the case for the Aeolian Islands, there is no evidence that the Maltese archipelago experienced a phenomenon of that sort. Moreover, according to Diodorus Siculus (V 9, 1), when the Knidians arrived in Lipari in 580 BC – although according to other authors that arrival should be placed some decades earlier – the island was not completely deserted, as approximately 500 indigenous people lived there. Five hundred individuals, that is 15 inhabitants per sq. km, is not a negligible population size for a small island such as Lipari in the Iron Age.

Stratigraphic evidence from the more recent excavations at Tas-Silġ North sheds light on the unbroken occupation of the sanctuary at the edge of the Phoenician colonisation. Moreover, this data significantly contributes to the understanding of the pattern of use of the sanctuary during the Bahrija period and to better define the chronological framework and cultural aspects of this period in the archipelago.

3.2 Defining the Bahrija period: open problems and some hypotheses

Within the stratigraphic sequences at Tas-Silġ North we identify as Bahrija the series of deposits starting from the lower layer yielding typical diagnostic Bahrija pottery types (Figures 3.3-4 and 7), such as carinated bowls with high strap handle, bowls with inverted rim and black or grey pottery with excised decorations (Figure 7) (Onnis in press). The upper levels of the Bahrija sequences have, in some cases, yielded a few Phoenician shards, which possibly indicate the beginning of contacts with the Phoenicians. Whereas, the building of Phoenician cultic structures at the Tas-Silġ sanctuary clearly marks the beginning of the new historic cycle.

The number of diagnostic Bahrija shards found at Tas-Silġ is small. Typical Bahrija shards from the Italian excavations 1963-1970 amount to less than 50 fragments (corresponding to the 2% out of the total prehistoric pottery), while those from the 2003-2011 excavations (in the northern sector) amount to approximately 100 fragments (corresponding to slightly more than 1% of the total prehistoric shards). As for the University of Malta's excavations 1996-2005 (in the southern sector),

C. Sagona (2015, p. 32) has pinpointed four typical decorated Bahrija shards. Yet, three more diagnostic Bahrija shards are recognisable among the pottery that she has considered as Tarxien Cemetery productions (Sagona 2015. fig. 1:11:4, 8; 1:151:5).

A large number of pottery productions in Borġ in-Nadur tradition occur in these Bahrija layers, including the distinct red-slipped ware. Given the long-lasting and repeated occupation of the same areas through time, residual shards are very common across the entire stratigraphic sequence at the site. For instance, Late Neolithic Tarxien pottery amounts approximately to 25% of the pottery assemblage in these latest prehistoric layers. Thus, a number of Borġ in-Nadur shards may be in fact residual. Nonetheless, it is likely that ceramic types that had come into use in the Borġ in-Nadur period were still produced during the Bahrija period, but the problem is distinguishing these ongoing productions from the residual shards. In this respect, quantitative analysis of the incidence of various types and pottery fabrics across the various deposits may provide supporting evidence for this distinction. The case of Dribbled Ware, discussed above, is illustrative of a production that possibly started in a very late phase of the Borġ in-Nadur period and then continued during the Bahrija period. Besides this, other stylistic traits may have come into use in the late 12th – early 11th c. BC and then endured in the first centuries of the 1st millennium BC (Copat in press).

Apart from the possible persisting production of Borġ in-Nadur type red-slipped ware, the most common types of surface finishing in the Bahrija period are black slips, dark red/black slips and brown surfaces. Moreover, a distinctive feature of the Bahrija productions appears to be a black band (slipped or painted) on the rim of bowls with inverted rim, whose surface treatment simply consists of burnishing (Figures 3.3 and 7, Onnis in press).

Although the research at Tas-Silġ and the re-examination of old excavations in Malta (Tanasi and Vella 2015) have provided new insights into the Bahrija period, its overall chronology and internal development still remain unclear. The forthcoming results of a series of radiocarbon dates from Tas-Silġ North will help to address this matter.

As mentioned above, the transition between the late Borġ in-Nadur and the Bahrija periods remains difficult to chronologically define. Considering the Maltese Late Bronze Age sequence as parallel to the Sicilian one, we suggest that Bahrija can be paralleled with the Sicilian Final Bronze Age and early Iron Age, and hence that it possibly started in the mid-11th c. BC. The occurrence of Bahrija-type vessels at Thapsos complex C, which dates to the final Bronze Age (Voza

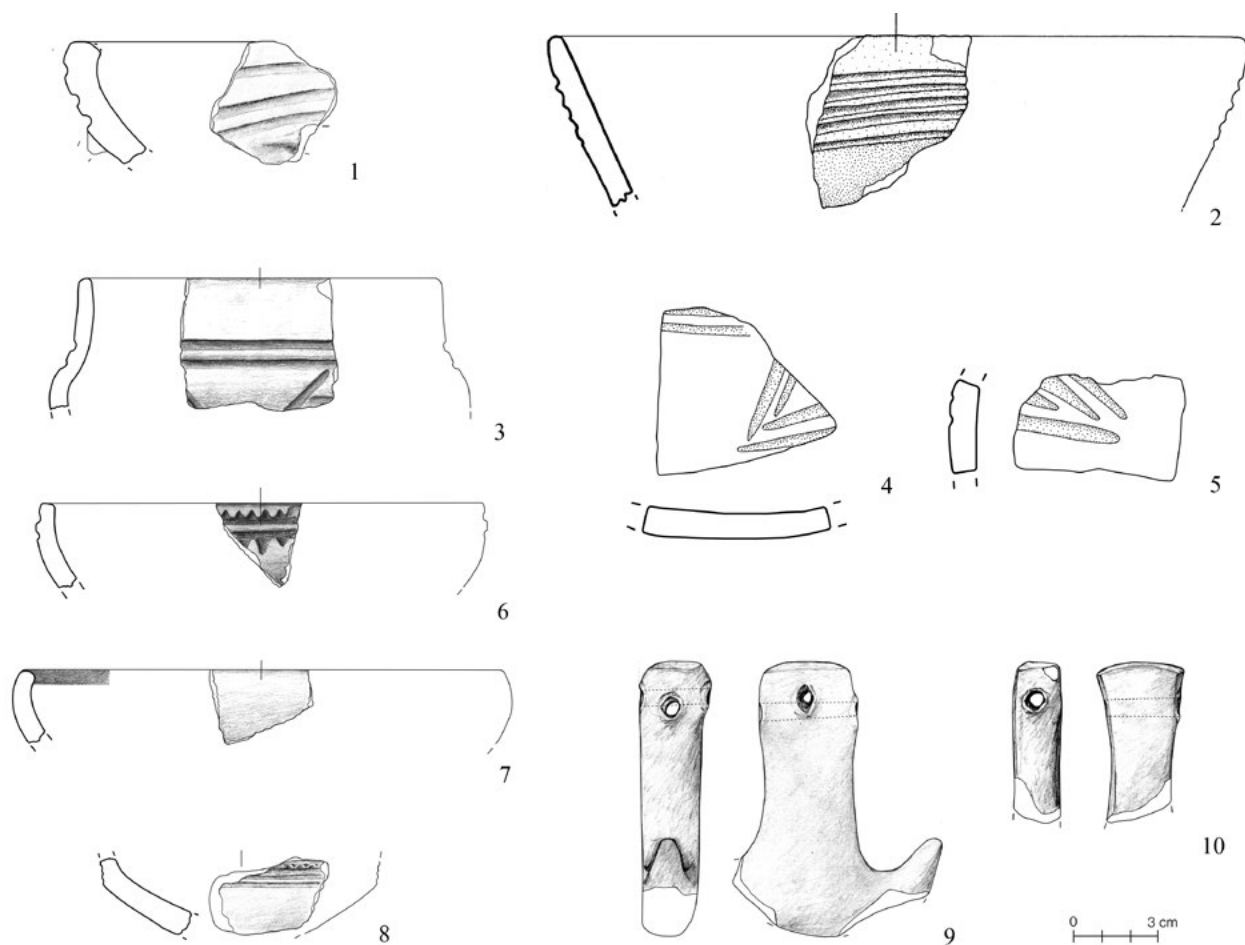


Figure 7. Tas-Silġ, Baħrija pottery and clay anchors. 1-2, 8: bowls with incised and excised decoration (excavations 1963-1970); 3: jar with excised decoration from area O (North side, excavations 2003-2011); 4-5: sherds with excised decoration (South side, excavations 1996-2005 – University of Malta; ns. 2102-2109/3, 2146/6); 6: bowl with excised decoration (North side, excavations 2003-2011); 7: bowl with painted band on the rim (North side, excavations 2003-2011); 9-10: clay anchors from area O (North side, excavations 2003-2011). (3, 9-10 drawing E. Onnis; 4-5 modified from Sagona 2015; 6-7 after Onnis in press).

1973; Alberti 2007), may provide supporting evidence for this hypothesis (Recchia and Cazzella 2011). As for the phase-sequence of the Thapsos settlement, we tend to follow Voza's hypothesis that there was not a long gap in the occupation of the settlement between circa 1250 and 1050. The reverse hypothesis that the settlement was abandoned around 1250 and then reoccupied some 200 years later (Alberti 2007, p. 373) implies that some of the former rectangular structures of complex C (that appear to be fragile types of buildings) would have remained standing for two centuries until they were reoccupied. In any case we cannot rule out that the Baħrija period in Malta began earlier than 1050 BC but supporting evidence for this is scant.

Recently D. Tanasi (2015, p. 93) pointed out that the late Borġ in-Nadur – Baħrija transition could have taken place 'much before the early 11th c. BC'. He based this hypothesis on the association in the H2 context at Borġ in-Nadur between Baħrija pottery and a distinct type of

vessel neck (Tanasi 2015, nr. 31062, fig. 162), which he compares to the neck of a Borġ in-Nadur type amphora from Cannatello (Tanasi 2015, fig. 35a). However, this is not a strong argument for retro-dating the beginning of Baħrija before the mid-11th c. BC. The two types of necks are not strictly similar, and besides that, necks of the kind found in H2 are quite common among Baħrija pottery productions. Even assuming that these neck types come into use during the late Borġ in-Nadur, they could have been still in fashion in the Baħrija period as is the case with other pottery types, thus they do not represent a good chronological marker.

Strong chronological evidence for the mature phase of the Baħrija period is provided by the occurrence of Sicilian-type artefacts in primary deposition Baħrija layers in the northern apse of temple IV (apse IVc) at Tas-Silġ North. These are: a serpentine bow fibula with curved pin of Sicilian type (*fibula ad arco serpeggiante*; Figure 8) and various fragments of plumed ware (*ceramica piumata*; Figure 8), possibly belonging to the

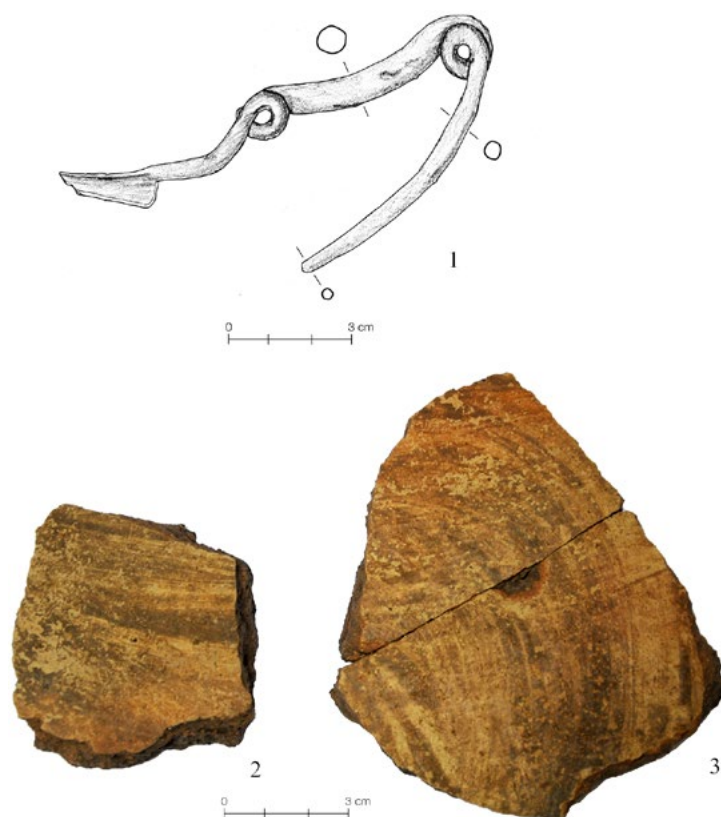


Figure 8. Tas-Silġ, finds from Bahrija layers in apse IVc (north-east side, excavations 2003-2011). 1: serpentine bronze fibula; 2-3: Plumed Ware (1 authors' drawing, 2-3 photos Italian Archaeological Mission).

same jar. In Sicily, both types of artefacts pertain to a phase between the end of the Cassibile period and the beginning of Pantalica Sud, that is between phases II and III of A. M. Bietti Sestieri's chronological proposal (Bietti Sestieri 1979). The overall time span of this phase is 1050 – 750 BC, but the serpentine bow fibulae with curved pin in particular would date between 900 and 750 BC.

Some similarities between distinct pottery productions from Malta and Sicily/southern Italy have been noted that may provide support for the parallelism between the Maltese and Sicilian chronological sequences, although the exact chronology of these productions has yet to be defined. The shards with painted hatched triangles from Malta (Trump 1961, p. 259) may recall Sicilian and southern Italian pottery productions with painted geometric motifs. Painted hatched triangles particularly recur in the early phase of Ausonian II (Bettelli *et al.* 2012), which dates to the 11th – mid-9th c. BC. Moreover, various scholars have pointed out parallels between the excised Bahrija pottery and shards from western Sicily belonging to the so-called 'protoelima' ware (Tusa 1992; 2012, p. 217; Spatafora 1996; Vella *et al.* 2011, fig. 9,7), that would date to the early Iron Age (9th-8th c. BC). Yet, these fragments of 'protoelima' ware are mostly surface finds and their chronology has yet to be confirmed.

The beginning of the Phoenician colonisation in Malta marked the end of the Bahrija period. The most widely accepted date for this turning point is the late 8th c. BC (Amadasi Guzzo 2011).

3.3 The Tas-Silġ sanctuary in the Bahrija period

Being the uppermost layers of the Prehistoric sequence at Tas-Silġ North, the Bahrija layers are likely to have been affected by disturbances and clearance in the subsequent Historic phases of occupation. Yet, undisturbed deposits survived in some areas (Figure 9), particularly in one apse of temple IV (apse IVc), in spaces located just North of temple IV (areas O, P, Q) and in the area located some 40 m West of the main megalithic buildings (areas X and Y). Moreover, the spatial distribution of distinct residual Bahrija pottery found in Historic layers at various areas of the site gives us a hint of the original extent of the occupation during this period. It should be taken into account, however, that the number of residual Bahrija shards is likely to be underestimated, since the most typical Bahrija pottery is only a portion

of the overall pottery production of this period, which also included ceramic productions of Borġ in-Nadur tradition.

The analysis of the distribution of residual Prehistoric pottery from the excavations of the 1960's has shown that the typical Bahrija sherds mostly come from areas 2N, 2S, 4 and 6 (fig. 1; Cazzella and Moscoloni 2004-05, fig. 1, tab. 1). Areas 2N and 6 actually encompass the zones where the recent excavations have unearthed Bahrija deposits (areas IVc-O-Q and X-Y respectively), while in area 2S (mostly occupied by temple I) no Bahrija deposits were preserved, due to intense occupations in later periods. As for the southern part of the site, the excavations carried out by the University of Malta between 1996 and 2005 appear to confirm the picture provided by the 1960's excavations (Sagona 2015, p. 32). Trenches B and C (corresponding to area 4 of the 1960's excavations) have yielded some Bahrija shards, while none appear to come from trenches A and D3 (located in area 3 of 1960's excavations), D1 & 2 and D4 (located south-west to area 3 of 1960's excavations). To those, as mentioned above, three more Bahrija shards can be added to the 4 identified by C. Sagona (2015), all coming from area C (one from SU 2146, one from SU 2102-2109 and one from SU 2109). In this perspective, it would seem then that the southernmost part of the site was not occupied during this period.

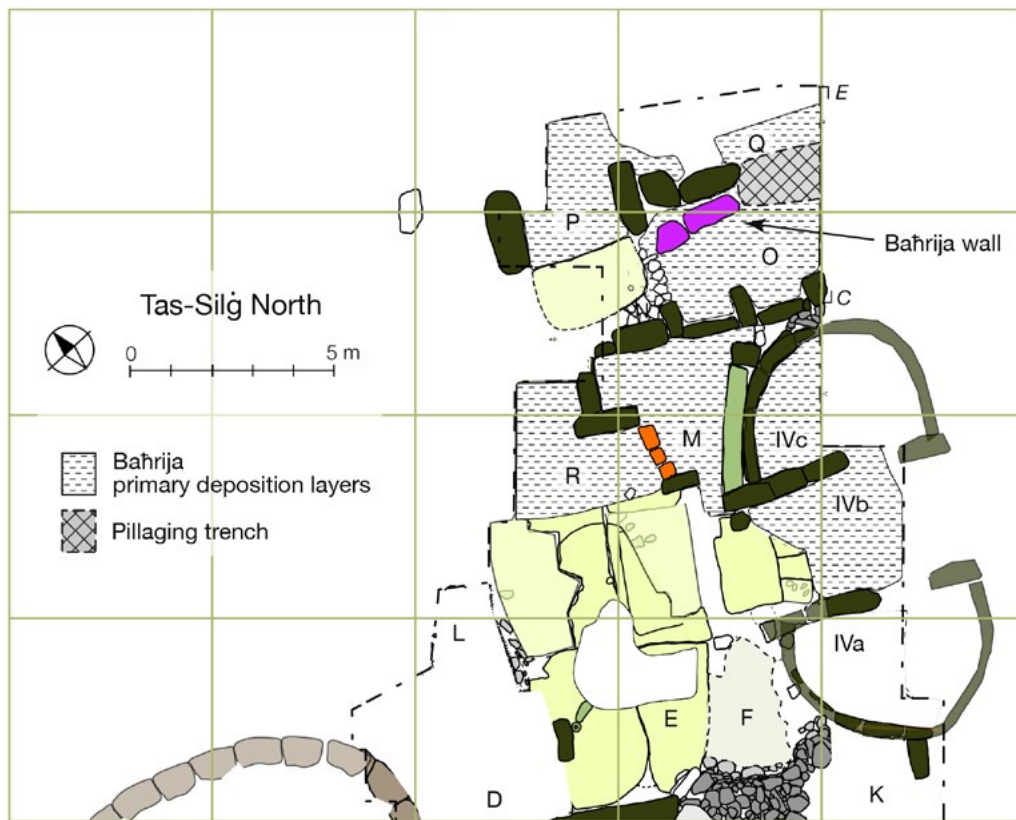


Figure 9. Tas-Silg, north-east side of the site (excavations 2003-2011). Plan of the prehistoric structures with indication of the extension of primary deposition of Bahrija layers. Lighter shade indicates the suggested reconstruction of some features.

The early Phoenician pottery from the 1960's excavations appears to be mostly distributed in areas 2S, 3 and 4; during the recent field research shards of this type have also been found in area 2N (Semeraro 2004-05, pp. 320-323; 2012, pp. 113-114, 117, Cazzella *et al.* 2016, p. 424). Thus, the areas of distribution of the Bahrija and early Phoenician pottery largely overlap, apart from the different occurrences in areas 6 (only Bahrija) and 3 (only early Phoenician). On the other hand, the area chiefly yielding Phoenician architectural features is that of the megalithic temple I (area 2S), which was partially transformed and integrated into the new architectural scheme of the sanctuary (Ciasca 1976-77; Rossignani 2009).

Evidence of the Bahrija occupation from apse IVc and area O is of particular interest. The stratigraphic sequence at both zones shows an uninterrupted occupation from the late Borg in-Nadur phase. Although only a small portion of apse IVc has been explored (Figure 10), the presence there of a Bahrija deposit indicates that temple IV (or at least some portions of it) was still occupied at the threshold of the 1st millennium BC. It is possibly not by chance that the objects chiefly illustrating close contacts with Sicily, such as the serpentine fibula and the plumed ware, have been found in this spot. The sequence of

Bahrija layers in area O was rather homogeneous as for both the nature of the deposits and type of finds. In particular, it was characterised by the presence of loom weights, spindle whorls and clay anchors (Figures 9-10); which were probably related to weaving processes as well). The original planimetric outline of this space – once not completely enclosed – was deeply modified during the Bahrija period by the building of a massive wall that closed its northern side and turned it into a narrow chamber. This newly-created room was repeatedly used over a certain span of time for the same pattern of activities, which included spinning and weaving. These are likely to have entailed a symbolic meaning, assuming that the sanctuary (or some parts of it) still had a ritual function in this period (Cazzella and Recchia 2017).

One issue that remains to be deeply investigated is that of the possible survival of the production of red-slipped pottery at the time in which the Phoenicians settled Malta. In particular, the problem consists of whether the occurrence of hand-made Phoenician-type red-slipped pottery together with the typical wheel-made Phoenician red-slipped pottery is due to the endurance of a long-lasting local pottery tradition or whether it is just a non-specialised



Figure 10. Tas-Silġ, north-east side of the site (excavations 2003–2011). Primary deposition of Bahrija layers in Apse IVc (photo Italian Archaeological Mission).

Phoenician pottery production, and not really linked to the previous Bronze Age tradition (cfr. Sagona 2015, pp. 34–35). In any case, as the stratigraphic evidence at Tas-Silġ north is indicating, the Bahrija period is likely to have lasted until the arrival of the Phoenicians to the Maltese archipelago in the 8th c. BC, which hence was not deserted. Thus, patterns of interactions between the local communities and foreign groups should be investigated. For instance, the reasons why the Phoenicians turned one of the megalithic temples at Tas-Silġ into the cell of the sanctuary dedicated to Astarte probably went beyond the good state of preservation of the megalithic building and the convenient geopolitical location of the site (Grima and Mallia 2011). Not only was a local community occupying the Tas-Silġ sanctuary when the Phoenicians arrived in Malta, but also the pattern of occupation is likely to have had a strong symbolic character. The Phoenicians might have created a link with this symbolic sphere, putting new meanings into it, as a way to both express their ideological dominion and legitimate their political power in the archipelago (*contra* Vella 1999).

3.4 Evidence of cross-cultural interactions with the Mediterranean sphere

Apart from the abovementioned finds attesting to the endurance of the relationships between Malta and Sicily and possible links with southern Italy too (Bahrija pottery at Thapsos, plumed ware, similarities with the ‘protoelima’ ware, painted ware possibly of proto-geometric/ geometric type, serpentine fibula), evidence of interactions with the Mediterranean sphere, particularly the eastern Mediterranean, is lacking, at least until the earliest contacts with the Phoenicians began. Scholars dealing with this subject have expressed different positions. A. Ciasca (1982) favoured the hypothesis that pre-colonial contacts with the Phoenicians scarcely affected Malta, while C. Sagona (2008, pp. 504–512) is inclined to raise the chronology of the earliest Phoenician pre-colonial contacts on the basis of some pieces of evidence from the area of Mdina. The recent excavations at Motya would indicate that imports from the eastern Mediterranean occasionally occur at the site between the 11th and 9th c. BC, while they significantly increase in number in the first half of the 8th c. BC, that is when the Phoenicians possibly settled there (Nigro 2016, pp. 355–357). In any case, a phenomenon of this kind does not necessarily apply to Malta. To date, the excavations at Tas-Silġ have not provided new evidence to assess the engagement of Malta in long-distance exchange networks during the first centuries of the 1st millennium BC. In this framework, however, the occurrence of loom weights and clay anchors in a Bahrija deposit in room O might offer a hint on intangible cross-cultural interactions. Aside from the typology and cross-comparisons of these objects – clay anchors occur in Malta since the Early Bronze Age (Malone *et al.* 2009; Cazzella and Recchia 2015, fig. 9) – the significance of this evidence lies especially in the possible linking between weaving activities and a cult place. This in fact could be related with a wider central Mediterranean phenomenon of textile activities and/or textile tool deposits in sanctuaries that developed particularly in the 1st millennium BC.

Endnote

This paper presents the views held by the two authors. In particular, A. Cazzella has written the following section: The late Borġ in-Nadur phase (mid-13th – mid-11th c. BC). G. Recchia has written the rest: The Bahrija period (mid-11th – 8th c. BC).

References

- Albanese Procelli, R. M. 2003. *Sicani, Siculi, Elimi. Forme di identità, modi di contatto e processi di trasformazione*. Milano: Longanesi.

- Albanese Procelli, R. M. 2012. La Sicilia centro-orientale dal Bronzo recente alla prima età del Ferro, in *Atti della XLI Riunione Scientifica*. Firenze: Istituto Italiano di Preistoria e Protostoria, pp. 185-205.
- Albanese Procelli, R. M. 2013. La Sicilia nella protostoria recente: interazioni mediterranee, in Miletto, M. (ed.), *Les lingots peau-de-boeuf et la navigation en Méditerranée centrale*. Ajaccio: éditions Alain Piazzola, pp. 101-120.
- Albanese Procelli, R. M., Chilardi, S. 2005. Materiali in avorio da contesti protostorici della Sicilia, in Vagnetti, L., Bettelli, M., Damiani, I. (eds), *L'avorio in Italia nell'età del Bronzo*. Roma: Consiglio Nazionale delle Ricerche, pp. 95-103.
- Alberti, G. 2007. *Minima Thapsiana*. Riflessioni sulla cronologia dell'abitato di Thapsos, *Rivista di Scienze Preistoriche* LVII, pp. 363-376.
- Amadasi Guzzo, M. G. 2011. *Il santuario di Astarte a Malta. Le iscrizioni in fenicio da Tas-Silġ*. Roma: Università di Roma 'La Sapienza'.
- Bernabò Brea, L. 1958. *La Sicilia prima dei Greci*. Milano: Mondadori.
- Bettelli, M., La Pilusa, E., Levi, S. T., Salerno, A. E., Savatteri, A., Zanini, A. 2012. L'Ausonio II nel quadro delle relazioni tirreniche e mediterranee alla fine del II millennio, in *Atti della XLIV Riunione Scientifica*, Firenze: Istituto Italiano di Preistoria e Protostoria, pp. 1-8.
- Bietti Sestieri, A. M. 1979. I processi storici nella Sicilia orientale fra la tarda età del Bronzo e gli inizi dell'età del Ferro sulla base dei dati archeologici, in *Atti della XXI Riunione Scientifica*. Firenze: Istituto Italiano di Preistoria e Protostoria, pp. 599-629.
- Bonanno, A. 2013. Malta in the central Mediterranean context in the Late Bronze Age and the Archaic Age: settlement and trade networks, in Miletto, M. (ed.), *Les lingots peau-de-boeuf et la navigation en Méditerranée centrale*. Ajaccio: éditions Alain Piazzola, pp. 269-276.
- Bonanno, A., Vella, N. (eds) 2015. *Tas-Silġ, Marsaxlokk (Malta) I: Archaeological excavations conducted by the University of Malta, 1996-2005*, Ancient Near Eastern Studies, Supplement Series 49. Leuven – Paris – Bristol, CT: Peeters.
- Bonanno, A., Vella, N. 2015. Introduction, in Bonanno, A., Vella, N. (eds) 2015. *Tas-Silġ, Marsaxlokk (Malta) I: Archaeological excavations conducted by the University of Malta, 1996-2005*, Ancient Near Eastern Studies, Supplement Series 49. Leuven – Paris – Bristol, CT: Peeters, pp. 1-16.
- Bonzano, F. 2017. *Fanum Iunoni Melitense. L'area centrale del santuario di Tas-Silġ a Malta in età tardo-repubblicana*, Excavations and research of the Italian Archaeological Mission 2. Bari: Edipuglia.
- Brusasco, P. 1993. Dal Levante al Mediterraneo centrale: la prima fase fenicia a Tas-Silġ, Malta, *Journal of Mediterranean Studies* 3,1: pp. 1-29.
- Cagiano de Azevedo, M., Caprino, C., Ciasca, A., D'Andria, F., Davico, A., Guzzo Amadasi, M. G., Rossignani, M. P. 1973. *Missione Archeologica Italiana a Malta. Rapporto preliminare della campagna 1970*. Roma: Università di Roma.
- Castellana, G. 2000. *La cultura del Medio Bronzo nell'agrigentino e i rapporti con il mondo miceneo*. Palermo: Regione Sicilia.
- Cazzella, A., Moscoloni, M. 2004-05. Gli sviluppi culturali del III e II millennio a.C. a Tas-Silġ: analisi preliminare dei materiali dagli scavi 1963-70 e della loro distribuzione spaziale, *Scienze dell'Antichità* 12, pp. 263-284.
- Cazzella, A., Pace, A., Recchia, G. 2011. The late second millennium B.C. agate artefact with cuneiform inscription from the Tas-Silġ sanctuary in Malta: an archaeological framework, *Scienze dell'Antichità* 17, pp. 599-609.
- Cazzella, A., Recchia, G. 2012. Tas-Silġ: the Late Neolithic megalithic sanctuary and its re-use during the Bronze Age and the Early Iron Age, *Scienze dell'Antichità* 18, pp. 15-38.
- Cazzella, A., Recchia, G. 2015. The Early Bronze Age in the Maltese Islands, in Tanasi, D., Vella, N. (eds) 2015. *The late prehistory of Malta: essays on Borġ in-Nadur and other sites*, Oxford: Archaeopress pp. 139-159.
- Cazzella, A., Recchia, G. 2017. Donativi nel santuario di Tas-Silġ a Malta durante il Bronzo Tardo – prima età del Ferro?, *Scienze dell'Antichità* 23.3.
- Cazzella, A., Recchia, G. 2018. Local networks and Aegean-Mycenaean connectivity in the Tyrrhenian and Adriatic seas, in Bettelli, M., Del Frio, M., van Wijngaarden, G. J. (eds), *Mediterranea Itinera. Studies in Honour of Lucia Vagnetti*. Roma: CNR – Istituto di Studi sul Mediterraneo Antico, pp. 11-31.
- Cazzella, A., Recchia, G., Semeraro, G. 2016. Le ricerche a Tas-Silġ Nord e la sequenza culturale di Malta dal Neolitico Tardo alla prima età del Ferro, *Scienze dell'Antichità* 22.2, pp. 417-427.
- Ciasca, A. 1976-77. Il tempio fenicio di Tas-Silġ: una proposta di ricostruzione, *Kokalos* 22-23, pp. 162-172.
- Ciasca, A. 1982. Insediamenti e cultura dei Fenici a Malta, in Niemeyer, H. G. (ed.), *Phoenizier im Westen*. Mainz: Philipp von Zabern, pp. 133-154.
- Cohen, C., Maran, J., Veters, M. 2010. An ivory rod with a cuneiform inscription, most probably Ugaritic, from a Final Palatial workshop in the lower citadel of Tyrins, *Archaeologische Anzeiger* 2010/2, pp. 1-22.
- Copat, V. in press. The Late Bronze Age pottery from Tas-Silġ North, in Rossignani, M. P., Cazzella, A., Semeraro, G., Recchia, G., Bonzano, F. (eds), *The sanctuary of Tas-Silġ in Malta: from late Neolithic place of worship to heathen sanctuary, to Christian church. Old and new excavation of the Italian Archaeological Mission (1963-2012)*, Excavations and research of the Italian Archaeological Mission 1. Bari: Edipuglia.
- Copat, V. 2018. Assessing Standardization in Maltese Prehistoric Pottery Production: the Case of Borġ in-Nadur Pottery, in Miloglav, I., Vukovic, J. (eds), *Artisans Rule: Product Standardization and Craft*

- Specialization in Prehistoric Society. Newcastle upon Tyne: Cambridge Scholars Publishing, pp. 178-212.
- Copat, V., Danesi, M., Ruggini, C. 2012. Late Neolithic and Bronze Age pottery from Tas-Silġ sanctuary: new research perspectives for the Maltese prehistoric sequence, *Scienze dell'Antichità* 18, pp. 39-63.
- Evans, J.D. 1953. The prehistoric culture-sequence in the Maltese Archipelago, *Proceedings of the Prehistoric Society* 19, pp. 41-94.
- Grima, R., Mallia, J. 2011. A tale of two ridges: topography, connectivity and use at Borġ in-Nadur and Tas-Silġ, in Tanasi, D., Vella, N. C. (eds), *Site, Artefacts and Landscape. Prehistoric Borġ in-Nadur, Malta. Praehistorica Mediterranea* 3. Monza: Polimettrica, pp. 225-250.
- Lo Schiavo, F., Muhly, J. D., Maddin, R., Giumlia Mair, A. (eds) 2009. *Oxhide ingots in the central Mediterranean*, Biblioteca di Antichità Cipriote 8. Roma: A.G. Leventis Foundation and Consiglio Nazionale delle Ricerche.
- Mayer, W. R. 2011. Eine babylonische Weihgabe in Malta, *Orientalia* 80, 2, pp. 141-153.
- Mayer, W. R. 2012. Un babilonese smarrito a Malta, *Scienze dell'Antichità* 18, pp. 91-96.
- Malone, C., Bonanno, A., Trump, D., Dixon, J., Leighton, R., Pedley, M., Stoddart, S., Schembri, P. J. 2009. Material culture, in Malone, C., Stoddart, S., Bonanno, A., Trump, D. with Gouder, T., Pace, A. (eds) 2009. *Mortuary customs in prehistoric Malta: excavations at the Brochtorff Circle at Xagħra (1987-94)*. Cambridge: McDonald Institute for Archaeological Research, pp. 219-314.
- Militello, P. 2004. Commercianti, architetti ed artigiani. Riflessioni sulla presenza micenea nell'area egea, in La Rosa, V. (ed.), *Le presenze micenee nel territorio siracusano*, Padova: Bottega d'Erasmus, pp. 295-336.
- Nigro, L. 2016. Mozia nella preistoria e le rotte levantine: i prodromi della colonizzazione fenicia tra secondo e primo millennio a.C. nei recenti scavi della Sapienza, *Scienze dell'Antichità* 22.2, pp. 339-362.
- Onnis, E. in press. Bahrija pottery from Tas-Silġ North, in Rossignani, M.P., Cazzella, A., Semeraro, G., Recchia, G., Bonzano, F. (eds), *The sanctuary of Tas-Silġ in Malta: from late Neolithic place of worship to heathen sanctuary, to Christian church. Old and new excavation of the Italian Archaeological Mission (1963-2012)*, Excavations and research of the Italian Archaeological Mission 1. Bari: Edipuglia.
- Pace, A. 2004. The Maltese Bronze Age, in Cilia, D. (ed.), *Malta before History*. Malta: Miranda Publishers, pp. 211-219.
- Panvini, R. 2005. Due pugnaletti con manico d'avorio dalla necropoli protostorica di Dessucri, in Vagnetti, L., Bettelli, M., Damiani, I. (eds), *L'avorio in Italia nell'età del Bronzo*. Roma: Consiglio Nazionale delle Ricerche, pp. 105-109.
- Pirone, F.S., Tykot, R.H. 2017. Elemental Characterization of Maltese Pottery from the Late Neolithic to Middle Bronze Age, *Open Archaeology* 3, pp. 202-221.
- Porada, E. 1981-82. The cylinder seals found at Thebes in Boeotia, *Archiv für Orientforschung* 28, pp. 1-70.
- Provenzano, N. Produzione in osso e corno delle terramare emiliane, in Bernabò Brea, M., Cardarelli, A., Cremaschi, M. (eds), *Le Terramare. La più antica civiltà padana*. Milano: Electa, pp. 524-535.
- Recchia, G., Cazzella, A. 2011. Maltese late prehistoric ceramic productions sequence and chronology: ongoing problems, in Sagona, C. (ed.), *Ceramics of the Phoenician-Punic World. Collected Essays*, Ancient Near Eastern Studies Supplement Series 36. Leuven – Paris – Bristol, CT: Peeters, pp. 375-395.
- Rossignani, M. P. 2009. Il santuario di Astarte a Malta e le successive trasformazioni del suo volto monumentale, in Helas, S., Marzoli, D. (eds), *Phoenizisches und punisches Staedtwesen, Iberia Archeologica* 13, pp. 115-130.
- Russell, A., Knapp, A. B. 2017. Sardinia and Cyprus: an alternative view on Cypriotes in the central Mediterranean, *Papers of the British School at Rome* 85, pp. 1-35.
- Sagona, C. 2008. Malta: between a rock and a hard place, in Sagona, C. (ed.), *Beyond the Homeland: Markers in Phoenician Chronology*, Ancient Near Eastern Studies Supplement Series 28. Leuven – Paris – Bristol, CT: Peeters, pp. 487-536.
- Sagona, C. 2014. Phoenician settlement: how it unfolded in Malta, in Lemaire, A. (ed.), *Phéniciens d'Orient et d'Occident*. Paris: Maisonneuve, pp. 351-372.
- Sagona, C. 2015. The pottery, in Bonanno, A., Vella, N. (eds), *Tas-Silġ, Marsaxlokk (Malta) II: Archaeological excavations conducted by the University of Malta, 1996-2005*, Ancient Near Eastern Studies Supplement Series 49. Leuven – Paris – Bristol, CT: Peeters, pp. 1-513.
- Semeraro, G. 2002. Osservazioni sui materiali arcaici di importazione greca dall'arcipelago maltese, in Amadasi Guzzo, M. G., Liverani, M., Matthiae, P. (eds), *Da Pyrgi a Mozia, Studi sull'Archeologia del Mediterraneo in memoria di Antonia Ciasca*, Vicino Oriente, Quaderno 3. Roma: Università di Roma 'La Sapienza', pp. 489-531.
- Semeraro, G. 2004-05. Nuove ricerche nel santuario di Astarte a Tas-Silġ: l'area Nord, *Scienze dell'Antichità* 12, pp. 311-324.
- Semeraro, G. 2012. Il santuario di Tas-Silġ in età storica. Contributo allo studio delle pratiche rituali e dell'organizzazione spaziale: l'area settentrionale, *Scienze dell'Antichità* 18, pp. 107-118.
- Spatafora, F. 1996. Gli Elimi e l'età del Ferro nella Sicilia occidentale, in Leighton, R. (ed.), *Early Societies in Sicily*, Accordia Specialist Studies on Italy 5. London: Accordia Research Center, pp. 155-165.

- Tanasi, D. 2008. *La Sicilia e l'arcipelago maltese nell'età del Bronzo Medio*. Palermo: Officina di Studi Medievali.
- Tanasi, D. 2008-2009 (2013). 'Prehistoric painted pottery in Malta' one century later, *Malta Archaeological Review* 8, pp. 5-13.
- Tanasi, D. 2009. Vasellame metallico in Sicilia e nell'Arcipelago maltese nella seconda metà del II millennio a.C. Forme egee per pratiche religiose indigene, *Orizzonti. Rassegna di Archeologia* X, pp. 11-27.
- Tanasi, D. 2014. Lighting up the dark. The role of Għar Mirdum in Maltese Prehistory, in Gullì, D. (ed.), *From Cave to Dolmen*. Oxford: Archaeopress, pp. 287-308.
- Tanasi, D. 2015. The pottery from the excavation campaigns of David H. Trump (1959) at the settlement of Borġ in-Nadur, in Tanasi, D., Vella, N. (eds) 2015. *The late prehistory of Malta: essays on Borġ in-Nadur and other sites*. Oxford: Archaeopress, pp. 35-98.
- Tanasi, D., Vella, N. (eds) 2015. *The late prehistory of Malta: essays on Borġ in-Nadur and other sites*. Oxford: Archaeopress.
- Trump, D. 1961. The later prehistory of Malta, *Proceedings of the Prehistoric Society* 27, pp. 253-262.
- Trump, D. 2002. *Malta. Prehistory and Temples*. Malta: Midsea Books.
- Tusa, S. 1992. La 'problematica elima' e testimonianze archeologiche da Marsala, Paceco, Trapani e Buseto Polizzolo, *Sicilia Archeologica* 78-79, pp. 71-102.
- Tusa, S. 2012. L'età del Ferro nella Sicilia occidentale, in *Atti della XLI Riunione Scientifica*. Firenze: Istituto Italiano di Preistoria e Protostoria, pp. 207-230.
- Vagnetti, L. 1968. I bacili di bronzo di Caldare sono Ciprioti?, *Studi Micenei ed Egeo-Anatolici* VII, pp. 129-138.
- Vella, N. C. 1999. Trunkless legs of stone: debating ritual continuity at Tas-Silġ, Malta, in Mifsud, A., Savona Ventura, C. (eds), *Facets of Maltese Prehistory*. Malta: Prehistoric Society, pp. 225-239.
- Vella, N. C., Mason, S., Farrugia, R., Zammit, M. E. 2015. Stratigraphy, in Bonanno, A., Vella, N. (eds) 2015. *Tas-Silġ, Marsaxlokk (Malta) I: Archaeological excavations conducted by the University of Malta, 1996-2005*, Ancient Near Eastern Studies, Supplement Series 49. Leuven – Paris – Bristol, CT: Peeters, pp. 45-230.
- Vella, N. C., Tanasi, D., Anastasi, M. 2011. Mobility and transitions: the south-central Mediterranean on the eve of history, in Tanasi, D., Vella, N. C. (eds), *Site, Artefacts and Landscape. Prehistoric Borġ in-Nadur, Malta*, *Praehistorica Mediterranea* 3. Monza: Polimetrix, pp. 251-282.
- Vidal Gonzalez, P. 1998. The transition between the Late Bronze Age and the Phoenician world in Malta, *Saguntum* 31, pp. 109-116.
- Voza, G. 1972. Thapsos, primi risultati delle più recenti ricerche, in *Atti della XIV Riunione Scientifica*. Firenze: Istituto Italiano di Preistoria e Protostoria, pp. 175-205.
- Voza, G. 1973. Thapsos, in Pelagatti, P., Voza, G. (eds), *Archeologia nella Sicilia sud-orientale*. Napoli: Centre Jean Bérard, pp. 30-52.
- Voza, G. 1992. Thapsos, in Rocchi, M., Vagnetti, L. (eds), *Seminari anno 1991*. Roma: Consiglio Nazionale delle Ricerche, pp. 43-50.
- Ward Perkins, J. B. 1942. Problems of Maltese Prehistory, *Antiquity* 16(61), pp. 19-35.

Chapter 12.

Zooarchaeology of Għar Mirdum.

Preliminary Analysis

Roberto Micciché

1. Introduction

The frequentation of caves has its roots in the most remote prehistory. Caves as dwelling sites or temporary shelters constitute one of the benchmarks of archaeological research in prehistory. However, apart from the settlement and functional exigencies, aspects primarily connected to the exploration of the symbolic world of ancient societies should be considered further. Indeed, caves provide the earliest known evidences of symbolic thought in the genus *Homo* in the form of Paleolithic cave art, and they are also the place where the first burials were found. The caves, because of the peculiarities of their geomorphology and landscape, were often perceived in antiquity as a kind of threshold between the natural and the supernatural spheres. In the analysis of animal remains coming from a hypogeal context the strong symbolic meaning of cave sites should be taken into account as well (Appleby and Preston 2012). Recent trends in zooarchaeology show an increasing number of studies aimed at examining the relationship between humans and animals under a broader approach that goes beyond the narrow role assigned to animals as merely sources of proteins to exploit (Russel 2012; Overton and Hamilakis 2013). Therefore, the faunal assemblage of Għar Mirdum has to be considered from the perspective of exploring the ritual practices of ancient societies who inhabited Malta during the Bronze Age, while also adding further information connected to their husbandry practices and to the ancient ecology of the island.

2. The Faunal Assemblage

The faunal assemblage was recovered during the exploration of the cave of Għar Mirdum between 1964 and 1965. Located at Ħad Dingli in south-eastern Malta, the cave is part of a complex karst system frequented in antiquity by humans from the Early Temple Period (4100-3700 BC) to the end of the Middle Bronze Age (1500-750 BC) (Tanasi 2014).

The survey of the 18 chambers that compose the cave system yielded a fair number of animal bones and bone fragments, mostly lying on the surface, which were

hand collected. The vast majority of the osteological sample analyzed comes from chambers M/N and P. These two chambers were the ones that provided the most noticeable evidence connected to ritual practice as testified by the large number of findings recovered, among which a bronze dagger discovered in chamber N and the presence of at least two burials in chamber P stood out the most. The human bones recovered belong to two individuals, one child and one adult. As reported in the daily diary of the early explorers, the discovery of the adult human remains led to further investigation of the chamber carried out through excavation that led to the finding of the child's burial (Mallia 1965). During the recent reappraisal of the zooarchaeological materials, object of the present paper, among the animal bones were recorded the presence of eight elements of human bone. Two belonged to an adult individual and were represented by a fragment of right maxillary bone with the second permanent premolar included and a complete first phalanx of the foot. The remaining six consisted of the right and left humerus, left femur, right and left tibia and left calcaneus, all attributable to an infantile individual (Figure 1).

The age at death of the infant was assigned relying on the diaphyseal length of the long bones according to the study of Maresh (1970) and gave a result of almost one year after birth. The aforementioned notice of the presence of an infant burial at Għar Mirdum in chamber P (Mallia 1965; Tanasi 2014) allows us to assign our infantile remains to this burial. Indeed, the photo of the infantile skeleton in the original documentation shows the lack of the newly discovered anatomical parts (see fig. 12 p. 293 in Tanasi 2014). However, in 1965 the age at death of the child was assessed to be two years of age. On the basis of this latter evidence, it is recommended that the age of death of the child's remains be reviewed with updated methods.

The faunal sample was quantified recording both the number of the identified specimens (NISP) and their weight. For selected contexts, this protocol was expanded to also calculate the minimal number of individuals (MNI) as proposed by Klein and Cruz-Uribe (1984). The remains were anatomically assigned



Figure 1. Infantile human remains recovered among animal bones coming from Chamber P.

and their completeness was evaluated following the diagnostic zones system (Dobney and Rielly 1988). Age at death was based on the epiphyseal fusion of the long

bones and the development and wear stage of the teeth (Habermehl 1975; Grant 1982; Payne 1973; Lemoine *et al.* 2014.). Bone measurements follow the standards suggested by von den Driesch (1976). The colour of burnt remains served as the basis for approximating the temperature at which specimens were burned, following the criteria of Shipman *et al.* (1984).

The zooarchaeological analyses involved a sample of 717 specimens with a NISP of 378 (Table 1) accounting for 53% of the entire recovered organic materials. However, if we rely on the weight as quantification method the percentage of identified specimens increases to 81% of the whole sample (Table 2). The general fragmentation index (total weight/number of fragments) gave a value of 9 g. While for the identified fraction the value increase to 14 g and decreases the average weight for unidentified elements to the notably small value of 3.6 g. The fragmentation of the sample seems to be most likely connected to ancient butchering processes and food processing rather than human trampling as the cave was sealed due to a collapse and remained unexplored until the 1964. The practice of butchery is further confirmed by the presence of numerous tool marks on bones mostly connected to the dismembering and defleshing of carcasses.

The identified fraction was composed almost exclusively of mammals with a NISP of 369 and a weight of 5203 grams. Among the identified osteological remains, the most represented *taxon* was the caprovines (Sheep/Goat) which accounted for 74% of identified remains. The pigs (*Sus domesticus*) were the second most common *taxon* accounting for 15% of the identified remains. Minimum percentages, ranging between 3% and 1%, were respectively recorded for cattle (*Bos taurus*) and red deer (*Cervus elaphus*). The sporadic presence of a few bones (n=4) belonging to the order of Chiroptera should not be seen as belonging to the archaeological

TAXA	CH-C		CH-M/N		CH-N		CH-P		NO CH*		TOTAL	
	Nsp	%	Nsp	%	Nsp	%	Nsp	%	Nsp	%	Nsp	%
MAMMALIA	1	50%	236	53%	35	41%	41	46%	56	58%	369	51%
<i>Ovis aries</i>			3	0,6%	2	2%	2	2%	3	3%	10	1%
<i>Capra hircus</i>			2	0,4%			2	2%			4	1%
<i>Ovis-Capra</i>	1	50%	187	42%	27	31%	26	29%	40	42%	281	39%
<i>Bos taurus</i>			5	1%	1	1%	1	1%	3	3%	10	1%
<i>Sus domesticus</i>			37	8%	5	6%	9	10%	7	7%	58	8%
<i>Cervus elaphus</i>			1	0,3%			1	1%			2	0,1%
Chiroptera			1	0,3%					3	3%	4	1%
AVES			8	2%	1	1%					9	1%
<i>Aves middle size (Gallus?)</i>			5	1%							5	1%
<i>Gallus gallus</i>			3	0,8%	1	1%					4	0,2%
TOT Identified specimens	1	50%	244	55%	36	42%	41	46%	56	58%	378	53%
Unidentified burned			21	5%	7	8%			7	7%	35	5%
Unidentified	1	50%	179	40%	43	50%	48	54%	33	34%	304	42%
TOT Unidentified specimens	1	50%	200	45%	50	58%	48	54%	40	42%	339	47%
GRAND TOTAL	2	100%	444	100%	86	100%	89	100%	96	100%	717	100%

Table 1. Ghar Mirdum faunal assemblage count (number of specimens).
*Probably Chamber P.

TAXA	CH - C		CH - M/N		CH - N		CH - P		NO CH*		TOTAL	
	Grams	%	Grams	%	Grams	%	Grams	%	Grams	%	Grams	%
MAMMALIA	7,65	42%	3148,82	79%	503,95	80%	796,35	85%	746,71	83%	5203,48	80%
<i>Ovis aries</i>			41,45	1%	33,95	5%	53,5	6%	221,15	25%	350,05	5%
<i>Capra hircus</i>			17,65	0,4%			45,4	5%			63,05	1%
<i>Ovis-Capra</i>	7,65	42%	2317,05	58%	371,55	59%	337,75	36%	326,6	36%	3360,6	52%
<i>Bos Taurus</i>			227,8	6%	52,7	8%	161,1	17%	120,35	13%	561,95	9%
<i>Sus domesticus</i>			530,55	13%	45,75	7%	172,5	18%	78,55	9%	827,35	13%
<i>Cervus elaphus</i>			14,3	0,4%			26,1	3%			40,4	1%
<i>Chiroptera</i>			0,02	0,01%					0,06	0,01%	0,08	0,01%
AVES			18,85	0,5%	3,25	1%					22,1	0,7%
<i>Aves middle size (Gallus?)</i>			10,05	0,3%							10,05	0,3%
<i>Gallus gallus</i>			8,8	0,2%	3,25	1%					12,05	0,4%
TOT Identified fragments	7,65	42%	3167,67	79%	507,2	80%	796,35	85%	746,71	83%	5225,58	81%
Unidentified burned			40,6	1%	12,15	2%			22,8	3%	75,55	1%
Unidentified	10,65	58%	782,35	20%	111,65	18%	137,34	15%	127,85	14%	1169,84	18%
TOT Unidentified fragments	10,65	58%	822,95	21%	123,8	20%	137,4	15%	150,65	17%	1245,39	19%
GRAND TOTAL	18,3	100%	3990,62	100%	631	100%	933,69	100%	897,36	100%	6470,97	100%

Table 2. Ghar Mirdum faunal assemblage count (weight in grams of specimens).

*Probably Chamber P.

deposit as these animals are still present in the natural environment of the cave. In addition to mammals, a small amount (nine elements) of birds' bones were recorded including four specimens assigned to the domestic fowl (*Gallus gallus domesticus*) (Figure 2).

The prevalence of caprovines is demonstrated by 295 specimens belonging to at least 18 individuals (MNI). Sheep are more represented than goats with a ratio between the two species of 2.5:1. Based on the length

of limbs bones (Table 3), the height at the withers for sheep and goats was calculated using the coefficients of Teichert (1975) and Schramm (1967) respectively. The wither height of the sheep ranges from 49.7 cm to 60.6 cm with an average value of 55.5 cm, while for the goat the average value was of 56 cm; both results point to small sized animals.

To assign the age at death for the caprovine *taxon* we relied on the criteria proposed by Payne (1973), which

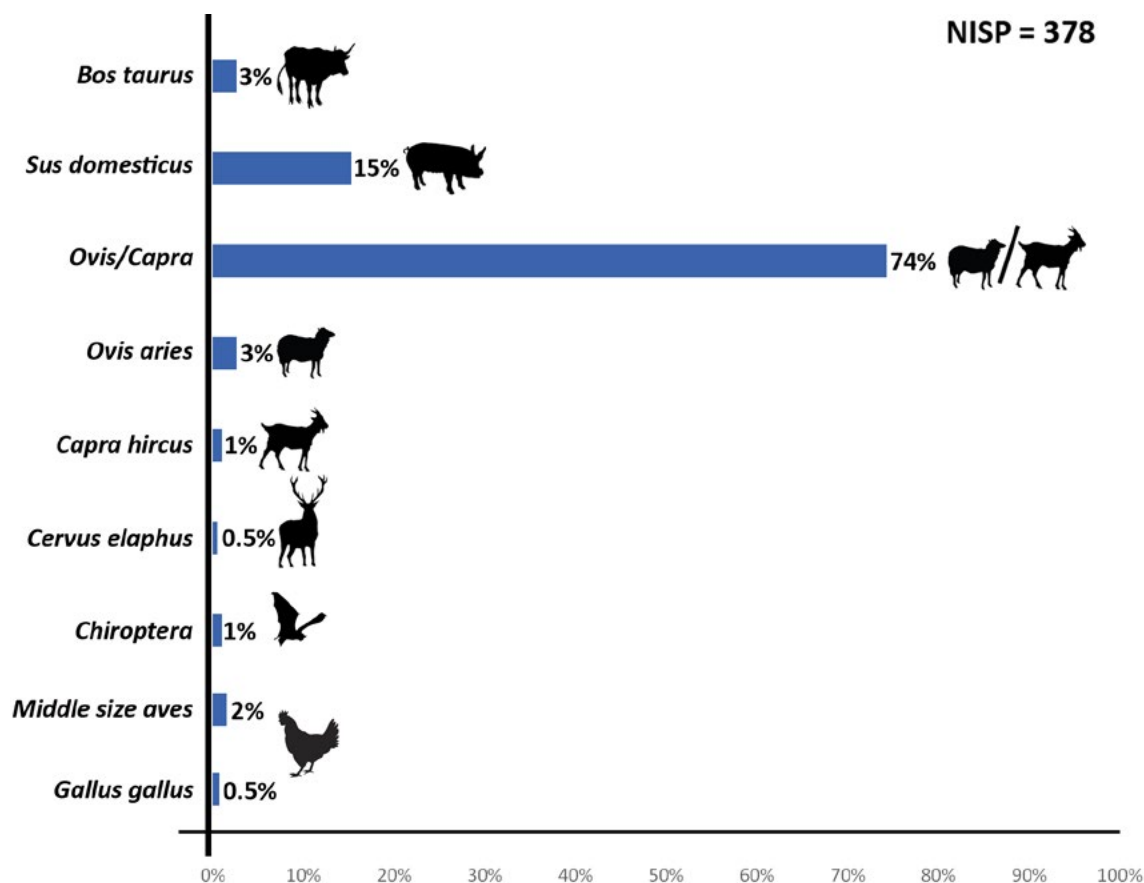


Figure 2. Relative frequency of identified species at Ghar Mirdum.

Taxa	Bone	Measurment					
		Bd	Dd				
<i>Bos Taurus</i>	Tibia	73.54	54.29				
		Bd	Dd	BT	Dmd		
<i>Bos Taurus</i>	Humerus	65.3		63.25	65.89		
		Bp	B				
<i>Sus domesticus</i>	Metatarsus 4	12.89	11.7				
		GLl	GLm				
<i>Sus domesticus</i>	Talus	36.45	33.05				
		GL	GB				
<i>Cervus elaphus</i>	Atlas	59.66	70.55				
		GL	SD	Bd	Dp		
<i>Capra hircus</i>	Humerus	132.32	15.59	27.69	38.1		
		GL	Bp	Bd	Dd	Dp	DD
<i>Ovis aries</i>	Metatarsus	116.1	19.02	22.82	15.01		8.93
<i>Ovis aries</i>	Metatarsus	109.59	19.08	22.33	14.89	17.2	8.75
<i>Ovis aries</i>	Metatarsus	128.14	17.2	20.18	14.3	18.04	9.27
		GL	Bp	Bd	Dd	Dp	
<i>Ovis aries</i>	Radius		27.95			13.89	
<i>Ovis aries</i>	Radius	150.97	29.78	26.45	16.69	14.7	
		GL	Bp	SD	Bd	Dd	Dp
<i>Ovis aries</i>	Tibia	187.52	36.39	12.15	24.01	17.68	35.4
		GL	Bp	GB			
<i>Ovis/Capra</i>	Calcaneus	56.76	13.98	19.62			
<i>Ovis/Capra</i>	Calcaneus	53.7					
		Bp	Bd	Dp	DC		
<i>Ovis/Capra</i>	Femur	41.21			19.34		
<i>Ovis/Capra</i>	Femur		35.5				
<i>Ovis/Capra</i>	Femur		34.38				
<i>Ovis/Capra</i>	Femur	37.65	32.76	39.97	18.26		
<i>Ovis/Capra</i>	Femur		35.57				
		GL	SD	Bd	BT	Dmd	
<i>Ovis/Capra</i>	Humerus			27.83			
<i>Ovis/Capra</i>	Humerus	143.8	14.72	29.38	28.67		
<i>Ovis/Capra</i>	Humerus		13.49	27.8	27.43	24.98	
<i>Ovis/Capra</i>	Humerus			26.2	25.47	22.58	
		GL	Bp	Bd	Dd	Dp	DD
<i>Ovis/Capra</i>	Metacarpus		19.5			15.6	
<i>Ovis/Capra</i>	Metacarpus	126	21.39	23.07	15.9	15.07	9.6
<i>Ovis/Capra</i>	Metacarpus	106	23.54	25.17	15.91	15.84	9.31

Table 3. Measurements of bones from Ghar Mirdum. All abbreviations are after von den Driesch (1976) and the measurements are in millimeters.

are based on the ontogenic stages of mandibles. The caprovines remains mostly belonged to individuals culled before the age of 12 months. To infer information

on the exploitation of caprovines we plotted a survival curve (Figure 3) correcting the rough data following the suggestion of Vigne and Helmer (2007). Because

Taxa	Bone	Measurment					
		GL	Bp	Bd	Dd	Dp	DD
<i>Ovis/Capra</i>	Metatarsus		20.26				
<i>Ovis/Capra</i>	Metatarsus		18.59				
<i>Ovis/Capra</i>	Metatarsus		20.15				
<i>Ovis/Capra</i>	Metatarsus	128.79	19.41	21.69	15.13		8.58
<i>Ovis/Capra</i>	Metatarsus	133.42	17.76	20.92	14.77		
<i>Ovis/Capra</i>	Metatarsus	129.66	21.54	24.41	14.58	21.09	9.67
		GL	Bp	Bd			
<i>Ovis/Capra</i>	First Phalanx	35.38	11.05	10.32			
		GL	Bp	Bd	Dp		
<i>Ovis/Capra</i>	Radius		24.11		12.91		
<i>Ovis/Capra</i>	Radius		31.83		15.49		
<i>Ovis/Capra</i>	Radius	149.56	27.45	25.64	15.39		
<i>Ovis/Capra</i>	Radius	138.14	26.73	24.49	13.79		
		Glad	Bp	Bd	SD	LO	
<i>Ovis/Capra</i>	Radius+Ulna	155.54	28.45	26.07	15.9	38.75	
		PL	GB	BFcr	HFcr		
<i>Ovis/Capra</i>	Sacrum	77.14	69.87	26.9	12.42		
		SLC	GLP	LG	BG		
<i>Ovis/Capra</i>	Scapula	15.74	26.51	20.98	16.97		
<i>Ovis/Capra</i>	Scapula		29.35		18.28		
<i>Ovis/Capra</i>	Scapula		34.03	26.8	22.35		
<i>Ovis/Capra</i>	Scapula		28.74	22.2	17.8		
<i>Ovis/Capra</i>	Scapula		31.56	24.57	20.27		
		GLl	GLm	DI	Bd	Bp	
<i>Ovis/Capra</i>	Talus	25.67	24.39	14.54	16.17	17.13	
<i>Ovis/Capra</i>	Talus	26.4	25.78		17.44	19.35	
		GL	Bp	Bd	Dd	Dp	CD
<i>Ovis/Capra</i>	Tibia	182		19.61	16.8		
<i>Ovis/Capra</i>	Tibia		39.8			40	
<i>Ovis/Capra</i>	Tibia		37.62			33.25	
<i>Ovis/Capra</i>	Tibia			24.31	18.26		
<i>Ovis/Capra</i>	Tibia		33.66			34.95	
<i>Ovis/Capra</i>	Tibia			23.8	18.36		
<i>Ovis/Capra</i>	Tibia			24.57	18.65		12.88
		GL	Bd	Dd			
<i>Gallus gallus</i>	Tibiotarsus	99.09	10.11	10.68			
	Tibiotarsus	101.94	10.02	10.19			
	Tibiotarsus	117.97	11.08	12.8			

Table 3. Continued.

the different time duration of Payne's age classes the probability (p) of an element to fall within any of them differs from one class to another. Consequently,

the rough frequencies have been corrected by a factor which is equal to $1/p$. The tendency shown by our survival curve is analogous to the Payne model

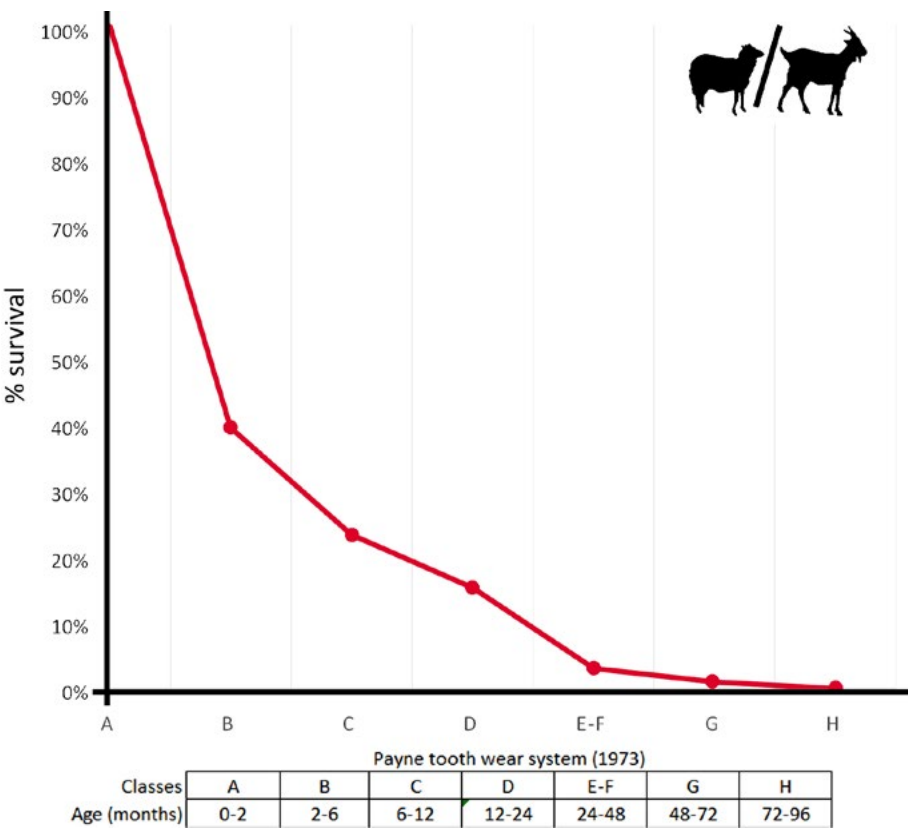


Figure 3. Caprovines survivorship curve based on the ontogenic stage.

connected to herd management typically attributed to the production of milk. However, this result should be carefully evaluated as our sample is limited to only 17 elements. Furthermore, the provenience of the remains from a ritual context could represent a further bias as the choice of the animals could have mostly followed ritual prescriptions that are not necessarily indicative of real production exigencies and herding strategies.

The presence of butchery marks on caprovine bones and the distribution of body parts is strongly indicative of how the animals were processed and prepared for consumption. The tool marks recorded on the Ghar Mirdum samples mostly belong to two main categories: dismembering marks aimed to disarticulate the animal and filleting marks indicative of meat removal (Binford 1981). The fragmentation of long bones diaphysis could be associated to the practice of marrow extraction as suggested by a few marks assigned to fresh bone cracking activities (Figure 4). Beyond tool marks, further information about butchering preferences was also gained through an investigation of the frequency of various body parts within the caprovines group (Figure 5). It was possible to note the presence of nearly every part of the animal with a preference for areas rich in meat such as the back, the shoulder and the upper posterior leg. Few low temperature burn traces on bones and the presence of hearths, ashes and carbon recorded in the cave, especially in the M/N and P chambers (Tanasi

2014), further strengthen the assumption regarding the preparation and consumption of the meat directly on the spot. Regarding the nature of the rituality that originated the zooarchaeological deposit in chambers M/N and P, we can speculate about a strong connection with mortuary ritual practices as these chambers were used as a burial site. The evidence provided by the presence of numerous objects in chambers M/N and P, accounting for more than 80% (Tanasi 2014) of the overall archaeological materials collected at Ghar Mirdum, and the relative large amount of animal bones in comparison to only two burials, could be most likely connected to the consumption of sacred meals rather than simple offerings of food.

We recorded four skeletal elements belonging to the domestic fowl: one fragment of the sternum (Figure 6) and three tibiotarsal bones. Even in this case, all the remains came from the exploration of the chambers M-N. One tibiotarsus shows on the distal epiphysis butchery marks caused by dismembering the distal portion of the leg. All the tibiotarsal bones have been measured (Table 3) following the criteria of von den Driesch (1976). Despite a low frequency among the Ghar Mirdum faunal assemblage, the domestic fowl (*Gallus gallus domesticus*) constitutes a remarkable presence. Deriving from the jungle red fowl, the chicken was first domesticated in south-east Asia and China around the 6th millennium BC. However, its dispersal to the Mediterranean remains largely undefined and

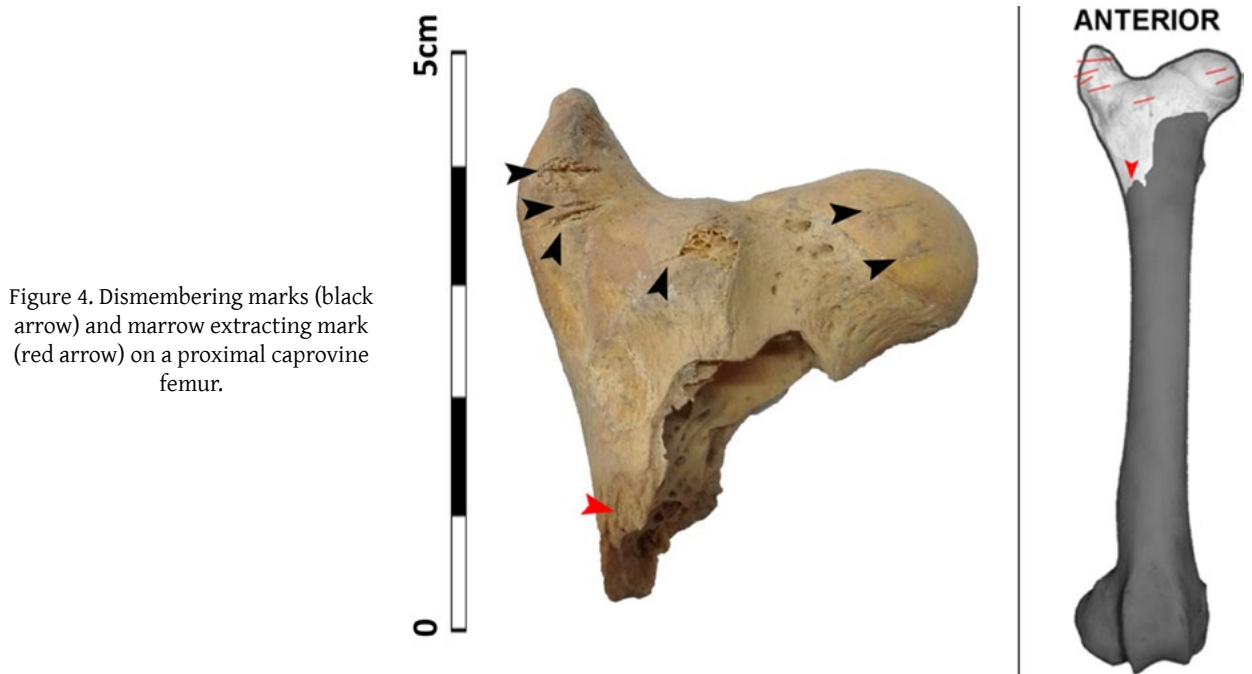


Figure 4. Dismembering marks (black arrow) and marrow extracting mark (red arrow) on a proximal caprine femur.

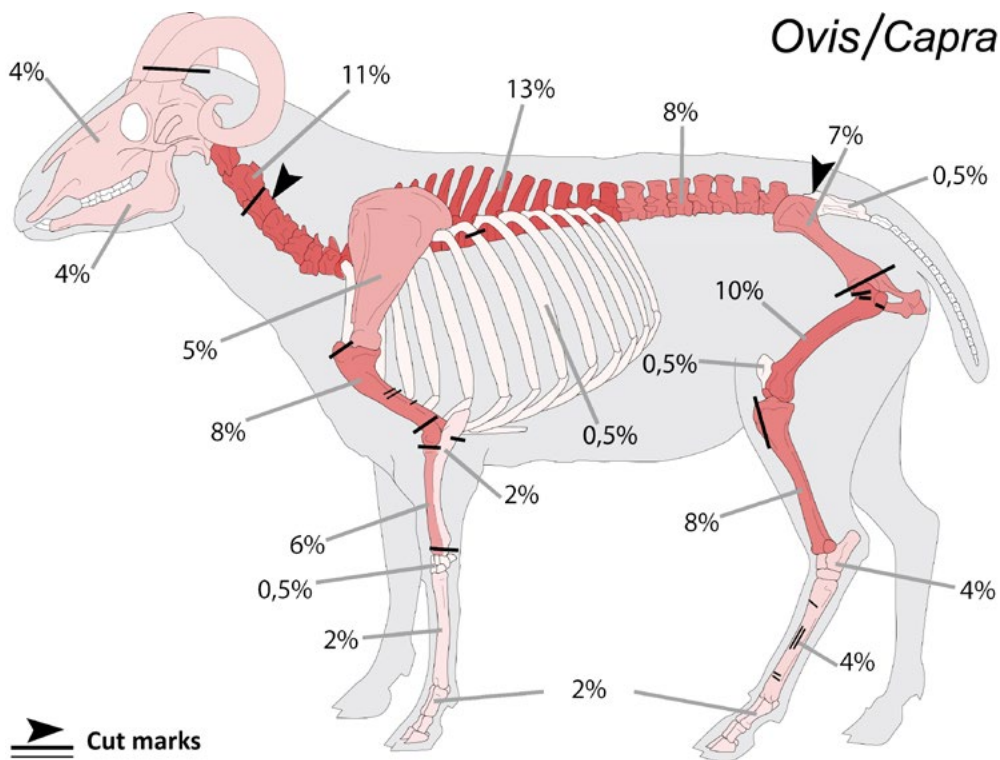


Figure 5. Relative frequency of body parts and butchery marks distribution for caprine taxon at Ghar Mirdum.

the first archaeological evidence of its introduction in the western Mediterranean basin is dated to the late 9th-8th c. BC, probably brought from the Levant by the Phoenicians (Perry-Gal *et al.* 2015). Even if the prevalence of archaeological materials belongs to the Middle Bronze Age, the lack of stratigraphy at Ghar Mirdum and the long time span of the Maltese Middle Bronze Age (1500-750 BC) make radiometric dating of the fowl's remains crucial. An absolute chronology associated to the chicken remains could open a new

scenario on the introduction of this species in the Mediterranean and on trade routes during the Bronze Age that involve Malta.

3. Conclusion

The overall picture provided by the faunal assemblage of Ghar Mirdum presents strong similarities in its species distribution with the coeval Maltese site of Borġ in-Nadur (Messina and Tanasi 2015). The relative



Figure 6. Lateral view of the sternum of the domestic fowl (*Gallus gallus domesticus*) discovered in chamber M/N.

frequencies of the main domesticates at the two sites are almost the same (Figure 7). Furthermore, both faunal assemblages probably come mostly from sacred contexts rather than secular. Looking beyond Malta, Sicilian Early Bronze Age sites provide the most consistent comparanda.

The same patterns characterized by the complete absence of wild species and the strong prevalence of caprovines are reported for the faunal assemblages coming from the sites of Monte Grande (Bedini 1998), an Early Bronze Age hilltop sanctuary, and for the sacred area of the Early Bronze Age village of La Muculfa (Holloway *et al.* 1990). A recent reappraisal of these two samples aimed to offer a wide picture of Early Bronze Age rituality in Sicily (Cultraro 2004) providing an interpretation of the nature of the faunal

assemblages as results of ritual feasting rather than specific offerings of food.

Despite the lack of a clear stratigraphy, the faunal assemblage recovered at Għar Mirdum constitutes a fundamental source of new data addressed to better define the ritual behaviors and mortuary practices that took place during the Late Prehistory of Malta.

References

Appleby, J. E. P., Miracle, P. T. 2012. Sacred Spaces, Sacred Species, in Holley, M. (ed.), *Sacred Darkness: A Global Perspective on the Ritual Use of Cave*. University Press of Colorado, Boulder, pp. 275-283.

Bedini, E. 1998. I reperti faunistici del deposito votivo del Bronzo Antico di Monte Grande', in Castellana, G. (ed.) *Il santuario castellucciano di Monte Grande e l'approvvigio namento dello zolfo nel Mediterraneo nell'età del Bronzo*, Palermo, pp. 431-454.

Binford, L. R. 1981. *Bones. Ancient Men and Modern Myths*. New York: Academic Press.

Cultraro, M. 2004. Food for the gods: animal consumption and ritual activities in the early Bronze Age Sicily in PECUS. *Man and animal in antiquity*. Proceedings of the conference at the Swedish Institute in Rome, September 9-12, 2002. Rome, pp. 201-211.

Dobney, K., Rielly, K. 1988. A method for recording archaeological bones: the use of diagnostic zones, *Circaea* 5, 2, pp. 79-96.

Driesch, A. von den 1976. *A Guide to the Measurement of Archaeological Bones from Archaeological Sites*, Peabody Museum Bulletin 1.

Grant, A. 1982. The use of tooth wear as a guide to the age of domestic ungulates, in: Wilson, B., Grigson, C. and Payne, S. (eds), *Ageing and Sexing Animal Bone*

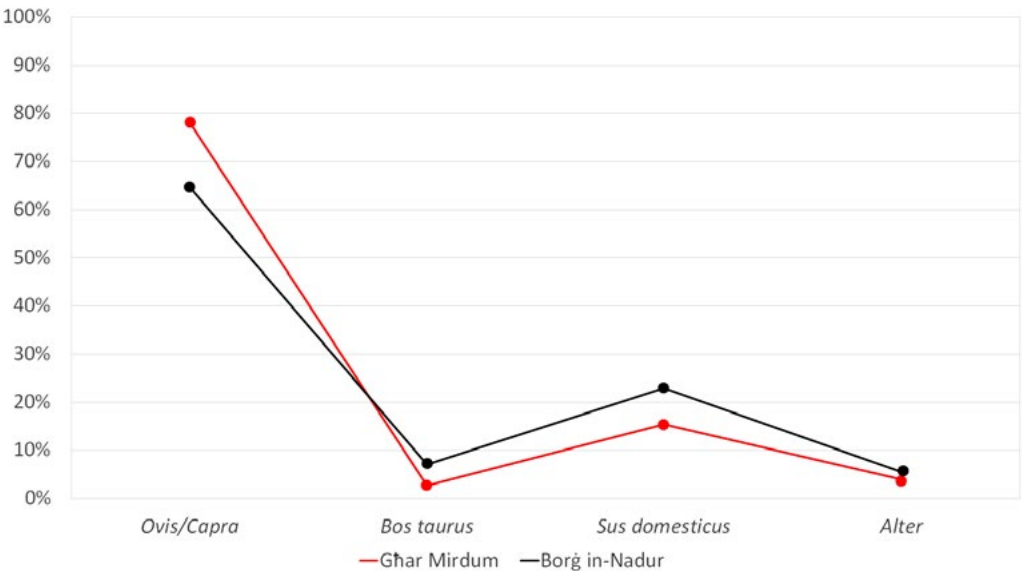


Figure 7. Relative abundances of main taxa for the sites of Għar Mirdum and Borġ in-Nadur.

- from *Archaeological Sites*. BAR Brit Ser 109, Oxford, pp. 91-108.
- Habermehl, K. 1975. *Die Altersbestimmung bei Haus und Labortieren 2*, vollständig neubearbeitete Auflage. Berlin and Hamburg.
- Holloway, R. R., Joukowsky, M. S., Lukesh, S. S. 1990. La Muculufa: the early Bronze Age sanctuary. The early Bronze Age village, *Revue des Archéologues et Historiens d'Art de Louvain* 23, pp. 11-68.
- Klein, R. G., Cruz-Urbe, K. 1984. *The Analysis of Animal Bones from Archaeological Sites*, University of Chicago Press.
- Lemoine, X., Zeder, M., Bishop, K. J., Rufolo, S. J. 2014. A new system for computing dentition-based age profiles in *Sus scrofa*, *Journal of Archaeological Science*, 47, 1, pp. 179-193.
- Mallia, F. S. 1965. Sites, in *Report on the working of the Museum Department, Malta*, pp. 1-2.
- Maresh, M. M. 1970. Measurements from roentgenograms, heart size, long bone lengths, bone, muscles and fat widths, skeletal maturation, in McCammon, R. W. (ed.), *Human growth and development*. Springfield, IL: Charles C. Thomas. pp. 155-20.
- Messina, A. D., Tanasi, D. 2015. Skeletal remains from Borġ in-Nadur in Tanasi, D. and Vella, N. C. (eds), *The Late Prehistory of Malta: Essays on Borġ in-Nadur and other sites*. Archeopress Archaeology, Oxford, pp. 287-308.
- Overton, N., Hamilakis, Y. 2013. A manifesto for a social zooarchaeology. Swans and other beings in the Mesolithic. *Archaeological Dialogues*, 20(2), pp. 111-136.
- Payne, S. 1973. Kill-off Patterns in Sheep and Goats: the Mandibles from Aşvan Kale. *Anatol Stud* 23, pp. 281-303.
- Perry-Gal, L., Erlich, A., Gilboa, A., Bar-Oz, G. 2015. Earliest economic exploitation of chicken outside East Asia: evidence from the Hellenistic Southern Levant. *Proceedings of the National Academy of Sciences* 112, pp. 9849-9854.
- Russell, N. 2012. *Social zooarchaeology. Humans and animals in prehistory*, Cambridge.
- Schramm, Z. 1967. *Long bones and height in withers of goat*, poln. engl. u. russ. Ausz. *Roczniki Wyzszej Szkoly Rolniczej w Poznaniu*, Posen 36, pp. 89-105.
- Shipman, P., Foster, G., Schoeninger, M. 1984. Burnt bones and teeth: an experimental study of color, morphology, crystal structure and shrinkage, *Journal of Archaeological Science* 11, 4, pp. 307-325.
- Tanasi, D. 2014. Lighting up the Dark. The Role of Ġhar Mirdum in Maltese Prehistory in Gulli, D. (ed.), *From Cave to Dolmen. Ritual and Symbolic Aspects in the Prehistory between Sciacca, Sicily and the Central Mediterranean*. Archeopress Archaeology, Oxford, pp. 287-308.
- Teichert, M. 1975. Osteometrische Untersuchungen zur Berechnung der Widerristhöhe bei Schafen, in Clason, A. T. (ed.) *Archaeozoological Studies*. North-Holland Publishing Company, Amsterdam/Oxford, pp. 51-69.
- Vigne, J. D., Helmer, D. 2007. Was milk a 'secondary product' in the Old World Neolithisation process? Its role in the domestication of cattle, sheep and goats, *Anthropozoologica* 42, pp. 9-40.

The Maltese Archipelago at the Dawn of History. Reassessment of the 1909 and 1959 excavations at Qlejgħa tal-Baħrija and other essays is a collection of essays focusing on the reassessment of the multifaceted evidence which emerged by excavations carried out in 1909 and 1959 in the settlement of Bahrija, a key site for the understanding of the later stages of Maltese prehistory before the beginning of the Phoenician colonial period. The two excavations, largely unpublished, produced a large quantity of ceramic, stone and metal artefacts together with skeletal remains. The reappraisal of the material will shed light on critical moments of central Mediterranean prehistory. Main topics such as the Aegean-Sicily-Malta trade network, mass migration movements from the Balkans towards the Central Mediterranean and the colonial dynamics of the Phoenicians operating in the West are addressed in the light of new data and with the support of an array of archaeometric analyses.

Davide Tanasi is an expert of Mediterranean prehistory and archaeology of ancient Sicily and Malta, in which fields he has published several papers and monographic volumes such as: D. Tanasi, N. Vella (eds), *Site, artefacts, landscape: prehistoric Borġ in-Nadur, Malta, Monza: Polimetrica* 2011; D. Tanasi, N. Vella (eds) *The late prehistory of Malta: essays on Borġ in-Nadur and other sites*, Oxford: Archaeopress, 2015.

David Cardona is Senior Curator of Phoenician, Roman and Medieval sites with the governmental agency Heritage Malta. He is a specialist of Roman and Late Roman archaeology and in this field he is about to publish a comprehensive work on Malta entitled *Roman buildings and their architecture in Malta*. His research interests include landscape archaeology, archaeology of technology and architecture.

