



Shami Kal-e Chendar

Research of the Iranian-Italian
Joint Expedition in Khuzestan

Edited by

Vito Messina and Jafar Mehr Kian

Shami, Kal-e Chendar

Research of the Iranian-Italian
Joint Expedition in Khuzestan

Edited by
Vito Messina and Jafar Mehr Kian



ARCHAEOPRESS PUBLISHING LTD

13-14 Market Square

Bicester

Oxfordshire

OX26 6AD

United Kingdom

www.archaeopress.com

ISBN 978-1-80327-955-8

ISBN 978-1-80327-956-5 (e-Pdf)

© The individual authors and Archaeopress 2025



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

I was shown to my surprise and delight
the bronze statue of a life-size man...

Marc Aurel Stein



IRANIAN-ITALIAN JOINT EXPEDITION IN KHUZESTAN

ARCHAEOLOGICAL REPORTS 2

Contents

List of Figures and Tables	ii
Foreword and Acknowledgements	ix
Introduction	xi
Vito Messina	
Chapter 1: History of Research at Kal-e Chendar	1
Vito Messina	
Chapter 2: Survey At Kal-e Chendar	9
Jafar Mehr Kian, Vito Messina	
Chapter 3: The Geology and Geomorphology of The Shami Valley	19
Marco Giardino	
Chapter 4: Topography of Kal-e Chendar	25
Nicolò Masturzo	
Chapter 5: The Landscape of Kal-e Chendar	33
Francesca Giusto	
Chapter 6: Excavation at Kal-e Chendar	65
Yalireza Baqherian, Ilaria Bucci, Alessandra Cellerino, Mehdi Faraji, Enrico Foietta, Francesca Giusto, Morteza Homayoon, Jafar Mehr Kian, Vito Messina, Mana Rohuani Rankouhi	
Chapter 7: The Pottery of Kal-e Chendar	195
Alessandra Cellerino	
Chapter 8: Archaeometric Investigation on Pottery of Kal-e Chendar	265
Patrizia Davit, Francesca Turco, Alessandro Borghi	
Chapter 9: Small Finds, Metal and Glass Vessels, Sculptures and Coins	285
Ilaria Bucci, Alessandra Cellerino, Enrico Foietta	
Chapter 10: The Prehistoric Lithic Assemblage of Kal-e Chendar	337
Elisabetta Starnini	
Chapter 11: The Cemetery of Kal-e Chander	345
Enrico Foietta	
Chapter 12: Conclusion	375
Jafar Mehr Kian, Vito Messina	
Bibliography	385

List of Figures and Tables

Chapter 1

Figure 1.1 - First page of a document addressed to the Iranian Antiquities Service to allow permission for Stein's Expedition to Southwest Iran (archive of the RICHT, courtesy of Negin Miri)	2
Figure 1.2 - Bronze statue of the s.-c. Parthian nobleman in Nā'ib's residence in Izeh (Stein 1940, fig. 46).....	3
Figure 1.3 - Map drawn by Stein of the debris fan at Kal-e Chendar and the area of Sartu (Stein 1940, pl. 10).....	4
Figure 1.4 - Sketch plan of the shrine supposedly identified by Stein and Karimi (Stein 1940, pl. 11).....	4
Figure 1.5 - Local fieldworkers in the Stein and Karimi's trench seen from North-East (Stein 1940, fig. 52).....	5
Figure 1.6 - Local fieldworkers in the Stein and Karimi's trench seen from South-West (Stein 1940, fig. 53).....	5
Figure 1.7 - A local fieldworker from North-East (courtesy of the British Library)	5

Chapter 2

Figure 2.1 - Comparison between the photographs taken by Stein in 1936 (left) and the photographs taken during our 2009 survey (right) (Messina, Mehr Kian 2014, fig. 2)	10
Figure 2.2 - Comparison between the map published by Stein (left) and a 2011 GeoEye1 scene (right) (Messina, Mehr Kian 2014, fig. 3).....	11
Figure 2.3 - Surface anomaly detection on a filtered 2011 GeoEye1 scene	12
Figure 2.4 - Detail of the area of Terrace 4 on a filtered and balanced 2011 GeoEye1 scene.....	12
Figure 2.5 - The Upper Terrace (or Stein-Karimi Terrace) from Qal'eh-ye Vali.....	13
Figure 2.6 - Stone squared column base loose on surface of the Upper Terrace.....	13
Figure 2.7 - Ancient stone block of masonry reused in the wall of a modern house at the feet of the Upper Terrace	14
Figure 2.8 - Undressed stones' corner of a small terrace or ruined building north of Terrace 3.....	15

Chapter 3

Figure 3.1 - Geological sketch map of the Middle East (modified from Alavi, 2007) for tectonic setting of the Zagros orogenic belt at the continental scale.....	20
Figure 3.2 - Satellite view (Landsat Image from Google Earth-Pro App, retrieved on 29/12/2023) of the Central Zagros mountains for regional geographical setting of the Kal-e Chendar sacred landscape	20
Figure 3.3a - Geological setting of the Central Kal-e Chendar Valley (yellow rectangle) for comprehensive analyses at the local scale (extract from sheet No. 20821 E, "Kuh-e Kamestan" of the Iranian geological map at a scale of 1:1,000,000; see Fig. 3b for legend).....	21
Figure 3.3b - Geological cross-section of the Central Zagros including the central Kal-e Chendar Valley (yellow rectangle) for comprehensive analyses at the local scale (extract from sheet No. 20821 E, "Kuh - E-Kamestan" of the Iranian geological map).....	21
Figure 3.4 - Geomorphological setting of the Kal-e Chendar sacred landscape within the gigantic landslide detached from the Kuh-e Bilaba mountain (Image from Google Earth-Pro App, retrieved on 29/12/2023).....	23

Chapter 4

Table 1. Reference stations reported in 2014.....	26
Figure 4.1 - The TIN (Triangulated Irregular Network) coloured by the slope of the terrain, over the false colours satellite image (NRG: Near infrared, Red, Green) of Kal-e Chendar	26
Figure 4.2 - Area A of the topographic survey. Contour lines at 1 m (survey C. Bonfanti, processing N. Masturzo).....	28
Figure 4.3 - Areas C-D of the topographic survey. Contour lines at 1 m, integrated with dashed contour lines at 0.5 m (survey and processing N. Masturzo).....	29
Figure 4.4 - Area D of the topographic survey. Contour lines at 1 m, integrated with dashed contour lines at 0.5 m (survey and processing N. Masturzo).....	30

Chapter 5

Figure 5.1 - The Shami area: physical geography. Hillshade model from DSM ALOS WORLD 3D, 30 m resolution (©JAXA); data from Topographic maps of Iran (sheet 5954III Keveshk, 2002, sheet 5954II Tarashok, 2002, sheet 5953IV Chamrehyān, 1999, sheet 5953I Īzeh, 1999 ©NGO, Army of the Islamic Republic of Iran) (elaboration by the autor).....	34
Figure 5.2 - The Shami area: hydrology. Hillshade model from DSM ALOS WORLD 3D, 30 m resolution (©JAXA); data from: Topographic maps of Iran (sheet 5954III Keveshk, 2002, sheet 5954II Tarashok, 2002, sheet 5953IV Chamrehyān, 1999, sheet 5953I Īzeh, 1999 ©NGO, Army of the Islamic Republic of Iran), Topographic maps (maps series SK 42, sheet I-39-XXXVI, 1972, code name Д-80-IX 72-H ©General Staff of the Soviet Army) (source: mapstore.com), Geological maps of Iran (sheet 20821E Kuh-e Kamestan, 1967 ©Iranian Oil Operating Companies) (elaboration by the author)	35
Figure 5.3 - Vegetation on the Bilevah peak, near Shami (photo by J. Mehr Kian)	37
Figure 5.4 - The plain of Izeh and one of the seasonal lakes from Qal'eh-ye Kazhdoum (photo by V. Messina)	38
Figure 5.5 - Simplified map of the types of soils in the Shami area. Hillshade model from DSM ALOS WORLD 3D, 30 m resolution (©JAXA); data from Soil maps of Iran, sheet Khūzestān (1991), scale 1:250.000 (©Soil and Water Research Institute of Iran) (elaboration by the author)	39
Figure 5.6 - Valley of Shami. Satellite image visible on Google Earth acquired on 9-23-2010 (image Landsat/Copernicus; image NASA © 2020 Maxar Technologies) (elaboration by the author).....	41

Figure 5.7 - Section of the valley of Shami in correspondence of the archaeological site, west-east direction. Elaboration from DSM ALOS WORLD 3D, 30 m resolution (©JAXA) (elaboration by the author)	42
Figure 5.8 - Valley of Shami: hydrology, modern villages and contour lines (50m). DSM ALOS WORLD 3D, 30 m resolution (©JAXA) (elaboration by the author)	43
Figure 5.9 - Valley of Shami: the areas covered throughout both the ground reconnaissance survey carried on by the <i>Iranian-Italian Joint Expedition in Khuzestan</i> and the remote-sensing analysis. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)	45
Figure 5.10 - Valley of Shami: detection of anomalies. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)	45
Figure 5.11 - Valley of Shami: detection of anomalies to the south of the site of Kal-e Chendar. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author).....	46
Figure 5.12 - Valley of Shami: detection of anomalies to the south of the site of Kal-e Chendar, detail of the northern part, with the anomalies ns. 1-2. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author).....	46
Figure 5.13 - Valley of Shami: detection of anomalies to the south of the site of Kal-e Chendar, detail of the central part, with the anomalies ns. 3-4. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author).....	47
Figure 5.14 - Valley of Shami: detection of anomalies to the south of the site of Kal-e Chendar, detail of the southern part, with the anomaly n. 5. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author).....	48
Figure 5.15 - Valley of Shami: detection of anomalies to the south of the site of Kal-e Chendar, detail of the southern part, with the anomaly n. 5. Image from Google Earth acquired the 2007-04-07 (Image©2019 Maxar Technologies, NASA) (elaboration by the author)	49
Figure 5.16 - Valley of Shami: detection of linear anomaly in the south-eastern part of the valley. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)	50
Figure 5.17 - Shami Valley: archaeological structures identified by the <i>Iranian-Italian Joint Expedition in Khuzestan</i> . High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)	51
Figure 5.18 - Shami Valley, eastern side of the Bilevah mountain: possible ancient terrace wall	52
Figure 5.19 - Shami Valley, eastern side of the Bilevah mountain: ruined building	52
Figure 5.20 - Section of the valley of Shami in correspondence of the archaeological site, south-north direction. Elaboration from DSM ALOS WORLD 3D, 30 m resolution (©JAXA) (elaboration by the author)	53
Figure 5.21 - Shami Valley, eastern side of the Bilevah mountain, Qal'eh-ye Vali. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)	53
Figure 5.22 - Shami Valley, eastern side of the Bilevah mountain, Qal'eh-ye Vali.....	54
Figure 5.23 - Shami Valley, top of the Bilevah mountain, remains of the qal'eh	54
Figure 5.24 - Shami Valley, top of the Bilevah mountain, remains of the qal'eh	55
Figure 5.25 - Shami Valley, top of the Bilevah mountain, remains of the qal'eh, detail of the stone masonry	56
Figure 5.27 - Shami Valley, top of the Bilevah mountain, remains of the qal'eh, detail of the stone drum	56
Figure 5.28 - Shami Valley, top of the Bilevah mountain, rock-cut niche	56
Figure 5.26 - Shami Valley, top of the Bilevah mountain, remains of the qal'eh, detail of the stone masonry with holes for iron clumps	56
Figure 5.29 - Shami Valley, Qal'eh-ye Shor Khoda. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)	57
Figure 5.30 - Shami Valley, area of Saleh Vand. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author).....	57
Figure 5.31 - Shami Valley, area of Saleh Vand: modern ruined buildings	58
Figure 5.32 - Shami Valley, area of Saleh Vand: ruined building	58
Figure 5.33 - Shami Valley, area of Saleh Vand: massive wall, perhaps a terracing wall	59
Figure 5.34 - Shami Valley, area of Saleh Vand: wall with boulders, perhaps part of the Stein "Cyclopean wall"	59
Figure 5.35 - Shami Valley, area of Saleh Vand: funerary stela of Islamic period	60
Figure 5.36 - Shami Valley, area of Saleh Vand: ruined buildings	60
Figure 5.37 - The settlement pattern in the Seleucid and Parthian periods in the area of Izeh. ALOS WORLD 3D, 30 m resolution (©JAXA) (elaboration by the author)	63

Chapter 6

Figure 6.1 - Kal-e Chendar. View of the debris fan and the Bilevah Mountain (in the background) from the east	66
Figure 6.2 - Kal-e Chendar. Aerial photo of the debris fan taken from UAV	67
Figure 6.3 - The Upper Terrace seen from Qal'eh-ye Vali.....	70
Figure 6.4 - The Upper Terrace. Aerial photo taken from UAV.....	70
Figure 6.5 - The Upper Terrace. Aerial photo taken from UAV. Detail of the southeast corner	71
Figure 6.6 - Qal'eh-ye Vali from the west	71
Figure 6.7 - Qal'eh-ye Vali. Aerial photo taken from UAV	73
Figure 6.8 - Upper Terrace. South retaining wall from the south	73
Figure 6.9 - Upper Terrace. South retaining wall. Detail of the southeast corner.....	74
Figure 6.10 - A spring (Spring 1) at the feet of the Upper Terrace's south retaining wall	75
Figure 6.11 - Upper Terrace. South retaining wall from the south (detail of the wall contour close to the southwest corner)	75

Figure 6.12 - Upper Terrace. Stone statue base or plinth in the wall of a storage place probably overlapping Nā'ib's trench.....	76
Figure 6.13 - Upper Terrace. Stone statue base or plinth in the wall of a storage place probably overlapping Nā'ib's trench.....	77
Figure 6.14 - Upper Terrace. Stone statue base or plinth in the wall of a storage place probably overlapping Nā'ib's trench.....	77
Figure 6.15 - Trench 1. Layout of the excavated area (scale 1:100).....	81
Figure 6.16 - Trench 1 from the north during excavation.....	82
Figure 6.17 - Trench 1 from the north during excavation. In the foreground, detail of SU 19.....	83
Figure 6.19 - Trench 1. Baked bricks and column segments from SU 6 and SU 7.....	84
Figure 6.18 - Trench 1. SU 4 and SU 7 from the east.....	84
Figure 6.20 - Trench 1. Selection of microliths from SU 16.....	85
Figure 6.21 - Trench 1. SU 4 and SU 8 from the east.....	86
Figure 6.22 - Trench 1. SU 11 and SU 4 from the east.....	87
Figure 6.23 - Trench 1. SU 11 and SU 4 from the south.....	87
Figure 6.24 - Trench 1. SU 11 and SU 4 from the south (detail).....	88
Figure 6.25 - Trench 8. Layout of the excavated area (scale 1:100).....	89
Figure 6.26 - Trench 8. SU 7 from the north.....	90
Figure 6.27 - Trench 8. SU 7 from the south.....	90
Figure 6.28 - Trench 8. Southern part of SU 7 from the west.....	91
Figure 6.29 - Trench 8. SU 7, SU 8 and SU 9 from the east.....	91
Figure 6.30 - Trench 8. Northern part of SU 7 from the west.....	92
Figure 6.31 - Trench 8. Southern part of SU 7 from the north.....	92
Figure 6.32 - Trench 8 during excavation from the west.....	94
Figure 6.33 - Trench 8. SU 19 from the south.....	95
Figure 6.34 - Trench 8. Northern parts of SU 7 and SU 21 from the west.....	96
Figure 6.35 - Trench 8. West side of SU 7 and south side of SU 21.....	96
Figure 6.36 - Trenches 1 and 8. Layout of the excavated areas (scale 1:500).....	98
Figure 6.37 - Upper Terrace. Trenches 1 and 8. Aerial photo taken from UAV.....	99
Figure 6.38 - Upper Terrace. Trenches 1 and 8. Aerial photo taken from UAV. Damp-marks anomalies.....	99
Figure 6.39 - Trench 2. Location and orientation of the west and south Upper Terrace's walls seen from Qal'eh-ye Vali.....	101
Figure 6.40 - Trench 2. Layout of the excavated area (scale 1:50).....	102
Figure 6.41 - Trench 2. SU 1 from the south-east.....	103
Figure 6.42 - Trench 2. SU 1 from the east. Detail of reused cut-stone.....	103
Figure 6.43 - Trench 2. Detail of the Upper Terrace's west retaining wall.....	104
Figure 6.44 - Trench 4 from the north.....	105
Figure 6.45 - Trench 6 (= T9). Ruined funerary chamber after excavation from the east.....	106
Figure 6.46 - Trench 6 (= T9). Ruined funerary chamber after excavation from the north.....	107
Figure 6.47 - Terrace 3. East retaining wall from the northeast.....	108
Figure 6.48 - Trench 3. Layout and section of the excavated area (scale 1:50).....	109
Figure 6.49 - Trench 3. SU 1 from the east.....	110
Figure 6.50 - Trench 3. SU 1 from the south.....	110
Figure 6.51 - Trench 3. SU 5 from the east.....	111
Figure 6.52 - Trench 3. SU 5 from the north.....	111
Figure 6.53 - Trench 3. Detail of a squared brick and brickwork seen from the hole in SU 1.....	112
Figure 6.54 - Trench 3. SU 6 below SU 1.....	112
Figure 6.55 - Trench 3. SU 1 and SU 5 from the east.....	113
Figure 6.56 - Trench 3. 3D reconstruction of the platform/altar and stair seen from the north-east.....	114
Figure 6.58 - Trench 3. Triangular baked brick with curved side.....	114
Figure 6.57 - Trench 3. 3D reconstruction of the platform/altar and stair seen from the south-east.....	114
Figure 6.59 - Trench 3. Stein and Karimi's excavation at Kal-e Chendar. In the foreground the brickwork 'b' (courtesy of the British Library).....	115
Figure 6.60 - Trench 3. Stein and Karimi's excavation at Kal-e Chendar. Brickwork 'b' (courtesy of the British Library).....	115
Figure 6.61 - Trench 7. Layout of the excavated area (scale 1:50).....	116
Figure 6.62 - Trench 7. SU 2 from the east.....	117
Figure 6.63 - Trench 7. SU 2. Detail of a reused stone slab probably coming from a tombs' roof.....	117
Figure 6.64 - Trench 11 (= T7). Layout of the underground chamber (scale 1:50).....	118
Figure 6.65 - Trench 11 (= T7). Tomb's roof from the north.....	119
Figure 6.66 - Trench 11 (= T7). Interior of the funerary chamber.....	120
Figure 6.67 - Trench 16 (= T20). Layout of the funerary chamber (scale 1:50).....	121
Figure 6.68 - Trench 16 (= T20). Interior of the funerary chamber from the south.....	122
Figure 6.69 - Trench 16 (= T20). Interior of the funerary chamber from the north.....	122
Figure 6.70a, b - North Terrace. Aerial photos taken from UAV.....	123
Figure 6.71 - Layout of the area of the North Terrace (scale 1:500).....	124
Figure 6.72 - North Terrace. Stairway from the north.....	126
Figure 6.73 - North Terrace. Stone assemblage from the north.....	126
Figure 6.74 - North Terrace. Aerial photo taken from UAV. Trenches 13 (Platforms 1-3), 14, 15 and 18.....	127
Figure 6.75 - Trench 13. Layout of the excavated area (scale 1:150).....	129
Figure 6.76 - Trench 13. Layout of Platform 1 (scale 1:50).....	131

Figure 6.77 - Trench 13. Platform 1 from the west	132
Figure 6.78 - Trench 13. Platform 1 from the northwest	132
Figure 6.79 - Trench 13. Platform 1 from the south	133
Figure 6.80 - Trench 13. Platform 1. Recess on the north side.....	133
Figure 6.81 - Trench 13. Layout of Platform 2 (scale 1:50).....	134
Figure 6.82 - Trench 13. Platform 2 from the northwest	135
Figure 6.83 - Trench 13. Platform 2 from the south	135
Figure 6.84 - Trench 13. Platform 2 from the east	136
Figure 6.85 - Trench 13. Platform 2. Detail of indented niche	136
Figure 6.86 - Trench 13. Layout of Platform 3 (scale 1:50).....	137
Figure 6.88 - Trench 13. Platform 3 from the northwest	138
Figure 6.87 - Trench 13. Platform 3 from the southwest	138
Figure 6.89 - Trench 13. Platform 3 from the northeast	139
Figure 6.90 - Trench 13. Platform 3. Aerial photo taken from UAV.....	139
Figure 6.92 - Trench 13. South Structures. Wall SU8 from the east	141
Figure 6.91 - Trench 13. South Structures. Wall SU8 from the west	141
Figure 6.93 - Trench 13. South Structures. Detail of a betyl or stand found close to the wall SU8.....	142
Figure 6.94a - Trench 9 (= T23). Layout of the excavated area (scale 1:50). Detail of the stepped corridor	146
Figure 6.94b - Trench 9 (= T23). Layout of the excavated area (scale 1:50). Detail of the funerary chamber.....	147
Figure 6.94c - Trench 9 (= T23). Sections A-A, B-B, C-C of the excavated area (scale 1:50).	148
Figure 6.94d - Trench 9 (= T23). Section D-D of the excavated area (scale 1:50).	149
Figure 6.95 - Trench 9 (= T23). SU 17 from the south. In the background the tomb's entrance blocked by a stone slab and rubble.....	150
Figure 6.96 - Trench 9 (= T23). SU 17 from the south. In the background the tomb's entrance.....	150
Figure 6.97 - Trench 9 (= T23). SU 17 seen from the funerary chamber	151
Figure 6.98 - Trench 9 (= T23).SU 17 from the north	151
Figure 6.99 - Trench 9 (= T23). West niche from the east	153
Figure 6.100 - Trench 9 (= T23). West niche blocked with stones from the east	153
Figure 6.101 - Trench 9 (= T23). West niche. SU 6 with bone's fragments	154
Figure 6.102 - Trench 9 (= T23). East small chamber with saddle roof	154
Figure 6.103 - Trench 9 (= T23). East small chamber's entrance blocked with stones	155
Figure 6.104 - Trench 9 (= T23). East small chamber. SU 9 with bone's fragments.....	155
Figure 6.106 - Trench 9 (= T23). Funerary chamber. Detail of the niche in the back wall (SU 12).....	156
Figure 6.105 - Trench 9 (= T23). Entrance of the funerary chamber	156
Figure 6.108 - Trench 9 (= T23). Funerary chamber. Funerary benches (SU 27-29) from the south.....	158
Figure 6.107 - Trench 9 (= T23). Funerary chamber. North wall and roof from the south	158
Figure 6.109 - Trench 9 (= T23). Funerary chamber. Detail of the saddle roof from the south.....	159
Figure 6.110 - Trench 9 (= T23). Entrance blocked seen from the funerary chamber	159
Figure 6.111 - Trench 9 (= T23). Funerary chamber. Funerary benches during excavation from the south	160
Figure 6.112 - Trench 9 (= T23). Funerary chamber. Funerary benches during excavation from the south	160
Figure 6.113 - Trench 9 (= T23). Funerary chamber. SU 27 from the east	161
Figure 6.114 - Trench 9 (= T23). Funerary chamber. Stone door socket reused in wall SU 13	161
Figure 6.116 - Trench 9 (= T23). SU 2, SU 4 and SU 3 east of the stepped corridor.....	162
Figure 6.115 - Trench 9 (= T23). Aerial photo taken from UAV	162
Figure 6.117 - Trench 9 (= T23). SU 2, SU 4 and SU 3 from the north.....	163
Figure 6.118 - Trench 9 (= T23). SU 2, SU 4 and SU 3. In the foreground the stepped corridor from the west	163
Figure 6.119 - Trench 9 (= T23). Detail of SU 3 from the east	164
Figure 6.120 - Trench 9 (= T23). Detail of SU 3 from the west	164
Figure 6.121 - Trench 9 (= T23). Detail of a door socket loose in the subsurface	165
Figure 6.122 - Trench 9 (= T23). Detail of a door socket loose in the subsurface	166
Figure 6.123 - Trench 12. Layout of the excavated area (scale 1:50)	167
Figure 6.124 - Trench 12. SU 1, SU2 and SU 3 from the north.....	168
Figure 6.125 - Trench 12. SU 1, SU2 and SU 3 from the east.....	168
Figure 6.126 - Trench 12. Flat slab found in SU 5	169
Figure 6.127 - Trenches 14 and 15 (= T28). Layout of the excavated area (scale 1:100).....	170
Figure 6.128 - Trench 14. Roomed building from the north.....	172
Figure 6.129 - Trench 14. Façade of T26 from the east (on the left, façade of T28 blocked by baked bricks).....	172
Figure 6.130 - Trench 14. Entrance and door of T26 seen from the funerary chamber.....	173
Figure 6.131 - Trench 14. Entrance and door of T26 seen from the above. On the background, court and Gr2	174
Figure 6.132 - Trench 14. Funerary chamber of T26 seen from the above.....	174
Figure 6.133 - Trench 14. Restored roof of T26.....	175
Figure 6.134 - Trench 14. Entrances of T26 and T28 blocked by iron grids.....	176
Figure 6.135 - Trench 15 (= T28). Entrance and door seen from the funerary chamber.....	177
Figure 6.137 - Trench 15 (= T28). Funerary chamber seen from the above.....	178
Figure 6.136 - Trench 15 (= T28). Detail of the carved door and lock-hole, with broken stone socket.....	178
Figure 6.138 - Trench 15 (= T28). Niche in the rear wall	179
Figure 6.139 - Trench 15 (= T28). Funerary chamber seen from the above. Squared baked bricks along the west wall	179
Figure 6.140 - Trench 14. Court delimited by T26 and T28 during excavation	180
Figure 6.141 - Trench 15 (= T28). Funerary chamber seen from the above. Detail with Gr3	180

Figure 6.142 - Trench 15 (= T28). Gr2 seen from the above	181
Figure 6.143 - Trench 10. Layout of the excavated area (scale 1:100)	183
Figure 6.145 - Trench 10 from the northwest.....	184
Figure 6.144 - Trench 10. Aerial photo taken from UAV	184
Figure 6.146 - Trench 10. Room 1. Walls SU8, SU1 and SU11 from the south.....	185
Figure 6.147 - Trench 10. Room 1. Wall SU 1 from the north.....	186
Figure 6.148 - Trench 10. Wall SU8 from the north	186
Figure 6.149 - Trench 10. T24. Aerial photo taken from UAV	187
Figure 6.150 - Trench 10. T24. Collapsed roof of the tomb during excavation.....	188
Figure 6.151 - Trench 10. T24. Funerary room during excavation from the southeast	188
Figure 6.152 - Trench 10. T24. Funerary room during excavation from the southeast	189
Figure 6.154 - Trench 10. T24. Hinged stone door. Detail of the lock-hole	190
Figure 6.153 - Trench 10. T24. Hinged stone door	190
Figure 6.155 - Trench 10. Gr1 seen from the above	191
Figure 6.156 - Trench 10. T25 from the southeast	191
Figure 6.157 - Trench 10. T25. Stepped corridor from the south	192
Figure 6.158 - Trench 10. T25 Stepped corridor and threshold from the south	192
Figure 6.159 - Trench 10. T25. Funerary chamber and roof during excavation.....	193
Figure 6.160 - Trench 17 (=T27). Roof and destroyed funerary chamber.....	194

Chapter 7

Figure 7.1 - Clay separator from Trench 10	197
Figure 7.2 - Glazed plate no. 1	199
Figure 7.3 - Glazed fishplate no. 4.....	201
Figure 7.4 - Glazed bowl with band rim no. 5	202
Figure 7.6 - Glazed bowl with band rim no. 7	202
Figure 7.5 - Glazed bowl with band rim no. 6	202
Figure 7.7 - Glazed bowl with band rim no. 9	202
Figure 7.8 - Glazed bowl with angular profile and outturned rim no. 10.....	203
Figure 7.10 - Glazed bowl with angular profile and outturned rim no. 13.....	203
Figure 7.9 - Glazed bowl with angular profile and outturned rim no. 11.....	203
Figure 7.11 - Glazed bowl with angular profile and outturned rim no. 14.....	203
Figure 7.12 - Glazed jug no. 15.....	205
Figure 7.13 - Glazed jug no. 17.....	206
Figure 7.14 - Glazed jug no. 20.....	207
Figure 7.15 - a) Glazed amphora no. 21; b) detail of rim	208
Figure 7.16 - a) Glazed flask no. 24, front view; b) lateral view	209
Figure 7.17 - Glazed small pot no. 25.....	211
Figure 7.20 - Glazed small jug no. 28	211
Figure 7.18 - Glazed small pot no. 26.....	211
Figure 7.19 - Glazed small pot no. 27.....	211
Figure 7.21 - Glazed amphoriskoi nos 29-30.....	212
Figure 7.22 - Red Slip carinated bowl with flaring rim no. 52.....	217
Figure 7.23 - Red Slip jug no. 59	219
Figure 7.24 - Red Slip amphora no. 64	219
Figure 7.25 - Red Slip miniature pot no. 65.....	220
Figure 7.26 - Glazed Ware. Plates and bowls with band rim.....	233
Figure 7.27 - Glazed Ware. Bowls with angular profile and outturned rim and jugs	235
Figure 7.28 - Glazed Ware. Jugs	237
Figure 7.29 - Glazed Ware. Jugs	239
Figure 7.30 - Glazed Ware. Amphoras and pilgrim Flask	241
Figure 7.31 - Glazed Ware. Small pots and amphoriskoi	243
Figure 7.32 - Glazed Ware. Miscellaneous shapes and bases	245
Figure 7.33 - Red Slip Ware. Plates and bowls	247
Figure 7.34 - Red Slip Ware. Jugs, amphora and miniature pot	249
Figure 7.35 - Red Slip Ware. Jars, pots and bases	251
Figure 7.36 - Common Ware. Small to large bowls	253
Figure 7.37 - Common Ware. Jars, jugs, amphora and pots	255
Figure 7.38 - Common Ware. Storage jars and pithoi.....	257
Figure 7.39 - Common Ware. Bases.....	259
Figure 7.40 - Cooking Ware. Pots and pans	261
Figure 7.41 - Glazed Ware and Common Ware. Handles and decorations.....	263

Chapter 8

Figure 8.1 - SEM BS images of samples 20C (top, left), 29G (top, right), 04G (bottom, left), 25G (bottom right), at different magnifications	267
Figure 8.2 - SEM BS images of samples 09R (left) and 18R (right) at different magnifications	268
Figure 8.3 - SEM BS images of samples 14R (top left), 16R (top right), 17R (bottom left), 13R (bottom right), at different magnifications	269

Figure 8.5 - SEM BS images of sample 21Ck at different magnifications	270
Figure 8.4 - SEM BS image of sample 03R at 230X magnification.....	270
Figure 8.7 - SEM BS images of sample 26 G/C at different magnifications	271
Figure 8.6 - SEM BS image of sample 30G.....	271
Table 1. Minero-petrographic classification of the samples.	272
Table 2. XRPD mineralogical composition of some selected samples. The analysis is to be considered only qualitative, but the mineralogical phases are listed in an approximate order of decreasing abundance. Parentheses indicate phases present in very small amounts.	273
Table 3. Mean values and the corresponding standard deviations of the EDX chemical composition data for each petrographic group, obtained on the whole body (both matrix and inclusions) and expressed as oxide wt%...	274
Table 4. Mean values and the corresponding standard deviations of the EDX chemical composition data for each petrographic group, obtained on the matrices and expressed as oxide wt%.....	275
Figure 8.8 - HCA diagrams obtained from the whole body (matrix plus inclusions) EDX chemical composition data.....	276
Figure 8.9 - PCA diagram obtained from the whole body (matrix plus inclusions) EDX chemical composition data	277
Figure 8.10 - FeO vs Al ₂ O ₃ bivariate diagram obtained on the bodies' EDX chemical composition after the elimination of the petrographic group 2, 3a and 6 samples	277
Figure 8.11 - CaO vs SiO ₂ bivariate diagram obtained on the bodies' EDX chemical composition.....	278
Figure 8.12 - CaO vs Al ₂ O ₃ bivariate diagram obtained on the bodies' EDX chemical composition after the elimination of the petrographic group 2 and 3a samples	278
Figure 8.13 - K ₂ O vs Na ₂ O bivariate diagram obtained on the bodies' EDX	279
Figure 8.14 - CaO vs MgO bivariate diagram obtained on the bodies' EDX chemical composition.....	279
Table 5. EDX chemical composition of the analysed glazes (*indicates the most macroscopically deteriorated surfaces) and red slips. Red slip composition is directly compared with the corresponding body chemical data.....	281
Figure 8.15 - SEM BS images (at different magnifications) of the surface layers of some of the glazed ware samples.....	282
Figure 8.16 - SEM BS images (at different magnifications) of the surface layers of some of the red slip ware samples.....	283
Chapter 9	
Table 1. Topographical distribution of the objects found at the site.....	286
Table 2. Object types quantity and distribution.....	287
Graph 1. Pie chart showing the percentage of objects per context	287
Figure 9.1 - Personal adornment	327
Figure 9.2 - Personal adornment	328
Figure 9.3 - Toiletries and furniture.....	329
Figure 9.4 - Vessels and tableware.....	330
Figure 9.5 - Vessels and Tableware	331
Figure 9.6 - Utensils	332
Figure 9.7 - Sculptures.....	333
Figure 9.8 - Sculptures.....	334
Figure 9.9 - Sculptures.....	335
Figure 9.10 - Coins.....	336
Chapter 10	
Figure 10.1 - Location Kal-e Chendar (Shami, red dot) on the soil map, and of major Late Palaeolithic sites in Zagros Mountains (Iran and Iraq) and other regions of Iran (top left, modified from Jayez 2019, Fig. 1)	338
Figure 10.2 - Kal-e Chendar (Shami) chipped stone artefacts: nos 1, 2, 4, 5, 8, 9, 13) unretouched bladelets and blade fragments; nos 3, 6, 7) retouched bladelets; nos 10, 12) flakes, debitage products; 11) bladelet core	339
Figure 10.3 - Kal-e Chendar (Shami) chipped stone artefacts: nos 1, 4) bladelets and bladelet fragments; nos 2, 3, 5-8) flakes, flakelets and fragments; no. 9) piece écaillé	340
Chapter 11	
Figure 11.1 - Examples of underground unexcavated tombs (T34, T35, T36), easily identifiable on the ground for the falling or the remains of the ceiling.....	346
Figure 11.2 - Location of the surveyed underground tombs at Qal-e Chendar/Shami (elaboration by the author from the topographical map elaborated by N. Masturzo).....	347
Figure 11.3 - Wall of Trench 9, close to T23	355
Figure 11.4 - Iranian excavation trenches (Trenches 14, 15, 18)	356
Figure 11.5 - Open court in front of T26 and T28	356
Figure 11.6 - Small censer (no. 79/SO94).....	357
Figure 11.7 - T23, picture taken from south; T25, picture taken from east	359
Figure 11.8 - Niche and Secondary Chamber of T23.....	359
Figure 11.9 - Secondary Chamber of T23.....	360
Figure 11.10 - Benches on three sides of the tombs 23 and 26.....	361
Figure 11.11 - Tomb 2 (Rahbar 1999, 92) and Tomb 1 (Rahbar 2007, 469, Figure 16).....	361
Figure 11.12 - Tomb of Saleh-Davud (Rahbar 2007, 470, Figure 18)	362
Figure 11.13 - Underground tomb 2 - Ville des Artisans at Susa (Boucharlat, Haerinck 2011, Pl. 13)	363
Figure 11.14 - Grab I - Coche/Veh Ardashir (Hauser 1993, Taf. 125)	363
Figure 11.15 - Underground chamber 131 - level II at Seleucia on the Tigris (Yeivin 1933, Pl. XVIII).....	364
Figure 11.16 - Underground tomb from the so called 'South Square', Seleucia on the Tigris (Messina 2007, 145, Figure 5).	365
Figure 11.17 - Niches on the back walls of T23 and T26; shelves on the back wall of T25 and loop-hole of T26	366

Figure 11.18 - Niche on the back wall of Tomb 1 (Gelalak) with a small glazed jug inside (Rahbar 1999, 93).....	367
Figure 11.19 - Monumental stone door of T24	367
Figure 11.20 - Stone carved doors of T26 and T28 in situ	368
Figure 11.21 - Eastern jamb with a protruding stone with a hole	369
Figure 11.22 - Carved stone door from a tower tomb of Palmyra – Palmyra Museum and carved door from a funerary building from Hatra (Archive of the Italian Expedition at Hatra)	370
Figure 11.23 - Pottery assemblage from T23.....	370
Figure 11.24 - Graves 1-3 discovered at Shami: a) Gr1 (stone walled grave); b) Gr2 (box in backed bricks); c-d) Gr3 (box in backed bricks)	371
Figure 11.25 - Parthian tomb in backed bricks (Cavallero 1967, figs. 30, 32)	372
Figure 11.27 - Gilviran tomb (Khorrambad – Luristan) (Haerinck, Overlaet 2013, 43).....	372
Figure 11.26 - General photograph of the Necropolis of Lama (Beshavar valley) (Soltysiak 2013, 94, Figure 1b).....	372
Figure 11.28 - Tomb of Cheram (Kuhgiloye va Boyer Ahmad) (Roustaei, Azadi 2011, 204, Pl. II).....	372
Figure 11.29 - Location of the main comparisons with Kal-e Chendar tombs (elaborated by the author)	373

Foreword and Acknowledgements

This report makes available the results of the research conducted between 2012 and 2018 by the *Iranian-Italian Joint Expedition in Khuzestan* at Kal-e Chendar, in the valley of Shami, about 30 km north of present-day Izeh. Our project aimed to shed new light on one of the most intriguing religious complexes of Hellenistic and Parthian Iran, located in highland Khuzestan, the heart of ancient Elymais. Identified thanks to the accidental discovery of statues and statues' fragments in 1935, the site of Kal-e Chendar was briefly investigated by Sir Marc Aurel Stein, one of the most famous explorers of Inner Asia, and Bahman Karimi, inspector of the Iranian Antiquities Service, early in 1936, to fall into oblivion for many decades despite the importance of the discoveries there made. Based on an interdisciplinary approach, our research tried to acquire new information on materiality and on the archaeological context systematically, to put forward hypotheses on function, chronology and meaning of the complex.

Our expedition operated within the frame of a Memorandum of Understanding (MoU) signed by Dr. Seyyed Mohammad Beheshti for the Research Organization of Iranian Cultural Heritage, Handicrafts and Tourism Organization (RICHT) and for the Iranian Center for Archaeological Research (ICAR), and by Prof. Vito Messina for the Centro Ricerche Archeologiche e Scavi di Torino per il Medio Oriente e l'Asia (CRAST) and the University of Torino (UniTo). Other institutions involved in the project were the Dipartimento di Architettura e Design (Department of Architecture and Design, DAD), Polytechnic of Torino (PoliTo), the Dipartimento di Studi Storici (Department of Historical Studies), the Dipartimento di Chimica (Department of Chemistry) and the Dipartimento di Scienze della Terra (Department of Earth Sciences), UniTo. The expedition was supported in Khuzestan by the Ayapir Cultural Heritage NGO.

Our research was generously financed, via the CRAST, by the Fondazione CRT, the Ministry of Foreign Affairs and International Cooperation of the Italian Republic (MAECI), and by UniTo.

Co-directors were Mr. Jafar Mehr Kian (RICHT-ICAR) and Prof. Vito Messina (CRAST-UniTo).

Members of the survey and excavation campaigns were Mr. Yalireza Baqherian (ICAR), Mr. Mhoammad Reza Baqherian (RICHT Gilan), Mr. Ali Berouzi (RICHT Khuzestan), Mr. Mehdi Faraji (RICHT Khuzestan), Mr. Morteza Homayoon (ICAR), Dr. Mana Rohuani Rankouhi (ICAR), Mrs. Leyla Sharifi, Mr. Mojtaba Shokrollai, Mr. Majid Soroush (RICHT Khuzestan) and Mr. Fraydoun Taghmasevi (RICHT Khuzestan), in alphabetical order for the Iranian side; Dr. Cristina Bonfanti (DAD), Dr. Ilaria Bucci (CRAST-UniTo), Dr. Alessandra Cellerino (CRAST-UniTo), Dr. Enrico Foietta (CRAST-UniTo) and Dr. Francesca Giusto (CRAST-UniTo), in alphabetical order for the Italian side.

Our joint expedition also worked at Hung-e Azhdar, one of the small valleys limiting the plain of Izeh at the feet of the Bakthiari chain, and in other areas of Elymais, especially addressing ancient settlement patterns and rock carvings of Parthian date. Preliminary and final reports of our previous research are published in the *Journal Parthica* and in several miscellaneous volumes and international congress proceedings. As agreed in the MoU, reports were first published in Iran. We started our activity in Khuzestan in 2008 and we could visit preliminarily Kal-e Chendar for the first time in 2009. Survey at the site started in 2012, during the 5th campaign of our expedition. Excavation campaigns have been conducted jointly during three seasons in 2013, 2014, and 2015. Fieldwork was conducted by the Iranian team solely, independently and beyond the common schedule, in 2016. Research on materials was conducted from 2016 to 2018. The coronavirus pandemic led to an interruption of our work in the period from 2019 to 2021. Fortunately, we could resume our activity to finalize this report in 2022, when Mr. Mehr Kian could join Prof. Messina in Torino to interpret the archaeological data so far processed.

We are particularly glad that the results of our work are published in open access. The history of research, the results of our survey from archaeological, geological, topographical, and environmental points of view, the results of excavation and archaeological and archaeometric studies on materiality are addressed in selected chapters, signed by different authors, which share the same bibliography at the end of the volume. We didn't follow particular rules of transliteration for names originally expressed in Persian, rather preferring to use the most frequent occurrences in relevant literature.

The Iranian-Italian Joint Expedition in Khuzestan owes to thank Dr. Seyyed Mohammad Beheshti, Dr. Jalil Golshan, Dr. Parisa Mohammadi (former Directors of the RICHT), Dr. Mohammad Hassan Talebian (former vice president of the ICHTO and Cultural Heritage Deputy), Dr. Amideh Chouback, Dr. Morteza Hessari, Mr. Mahmoud Mireskanderi, Dr. Abbas Moqhaddam, Dr. Kourosh Roustaei, Dr. Siamak Sarlak, Dr. Rouhollah Shirazi (former Directors of the ICAR); Mr. Parviz Pourfarouxi (former Director of the Khuzestan ICHTO), Mr. Mehdi Rahmani (former Director of Izeh ICHTO); Dr. Monir Kholghi, Mrs. Susan Cheragchi, Dr. Shervin Goudarzi and Mrs. Samira Kiani (International Office of the RICHT) for their constant and precious support; Dr. Darvishpour and Mr. Dehqan (former People Representative Member of the Islamic Parliament), Dr. Darvishpour and Mr. Hamzeh (former Governors of the District of Izeh), Mr. Aqajan Alikhani, Mr. Mohammadi, Mr. Hamzeh and Eng. Qalavand (former Governors of the city of Izeh), Mr. Ibrahim Baqheri and Mr. Novruzi (former Governors of the village of Kal-e Chendar), Eng. Hamdollah Qasemi (former Director of Izeh Road and Urban Office), Mr. Mohammad Hassan Jafari, Mr. Gholam Reza and Hamid Bouzarjoumeri and their family, Mr. Shahpur Kiani Baxhtiari and his family, the family of Mrs. and Mr. Gheisar Saidipur, Mr. Ali Zandi, Mr. Kouravand, Mr. Ebrahim Ahmadian, Mr. Hormoz Mousavi, Dr. Baxtiyari, Mr. Maqsoudi, Mrs. Dehbanipour, Mr. Gaestouni, Mr. Reza Houseini, Mr. Qasemi, Mr. Kavousi, Mr. Baqheri (former Directors of the school of Kal-e Chendar), Mr. Ibrahim Baqheri, and all the lovely people of Izeh and Kal-e Chendar; H. E. Mauro Conciatori and H. E. Giuseppe Perrone (former Italian Ambassadors in Iran), all the staff of the Embassy of the Italian Republic in Iran, and particularly, Prof. Carlo Cereti (former Cultural Attaché of the Embassy of the Italian Republic in Iran), and his family, Dr. Yaroslava Romanova (Cultural Attaché of the Embassy of the Italian Republic in Iran). We owe to thank in Italy, H. E. Dr. Mozaffari (former Ambassador of the Islamic Republic of Iran in Italy), Dr. Pourmarjan (former Cultural Attaché of the Embassy of the Islamic Republic of Iran in Italy), the staff of the Consulate of the Islamic Republic of Iran in Milan, Dr. Gianluca Biscardi and Dr. Paola Ricca Mariani (MAECI), Dr. Silvio Boccardo, Dr. Luigi Somenzari and Dr. Chiara Ventura (Fondazione CRT), Prof. Gianluca Cuniberti (Director of the Dipartimento di Studi Storici, UniTo), Prof. Stefano de Martino (Scientific Director of the CRAFT), Prof. Carlo Lippolis (President of the CRAFT), Mrs. Chiara Invernizzi (Secretary of the CRAFT). We also thank Dr. Claudio Fossati (Dipartimento di Studi Storici UniTo) for his help in editing pottery and small finds drawings.

We are particularly grateful to the late Antonio Invernizzi (former President of the CRAFT), mentor of our research.

J.M.K., V.M.

Introduction

Vito Messina

When the complex of Kal-e Chendar was perchance discovered in the valley of Shami, almost ninety years ago, it was clear that something remarkable had just come to light in the highlands of Khuzestan. A place in the Bakhtiari mountains, literally in the middle of nowhere, had become –and still is– the only known site throughout Iran where bronze statues larger than life size of Hellenistic and Parthian date had been found. The Shami valley is not far from present-day Izeh and it is thus located in the piedmont of ancient Elymais, a region and a political entity often mentioned in literary sources. This raised the interest of local people and governors, of the Iranian Antiquities Service, of famous explorers of the time, and, in the end, of a wide audience; an interest that remained surrounded by a mysterious aura in the following decades, up to very recent times. Indeed, except for cursory (although influential) research, conducted in the immediacy of the event, which made the name of Shami almost legendary among scholars, the site fell into oblivion, probably due to its remoteness, and nothing was acquired, but ephemeral information, to understand its archaeological context. This gave the way to our research project.

The remoteness of the site appeared, and is still seen, as an incoherence when the high standard and the chronology of the fragmentary statues there found are considered. These findings parallel examples coming from major centers of production of the ancient world, and date to a period in which an increased propensity to connectivity was effectively experienced from the Mediterranean to the Indian Subcontinent and China, and from Central Asia to Africa. Thus, even if appearing as a place in the middle of nowhere, the site of Kal-e Chendar must have been in connection with other, less remote, places.

Although traceable in more ancient times thanks to information in historical records and to material evidence (especially dating from the Achaemenid period onward), the connective propensity of different regions was incredibly enhanced by the implementation of a network system of land and water routes that reached high effectiveness at the turn of the Christian Era. The lands of Asia were of crucial importance in such a network, even if some areas, such as alluvia, revealed a higher inclination to connectivity thanks to their geomorphological setting and the presence of waterways. Despite an unfavorable geomorphology, the Iranian Plateau seems to have been integrated into this connective network, as the presence of major cities such as Laodikeia-Media, Antioch-Persis, Apamea-Rhagae and Seleucia-Hedyphon –alas almost unexplored or not yet located on the ground, but mentioned in ancient literary sources– seems to show. Known archaeological records also testify that some regions of the Plateau could have bridged Mesopotamia to Central Asia and the Indian Subcontinent, benefiting in the last case from a key-position for the access to the Persian Gulf.

However, it appears that not all the Plateau benefited from the presence of overland routes that worked effectively: the connectedness of some mountainous areas is less evident than that of other contexts, and settlement patterns seem rather characterized in the mountains by sites or monuments sparsely located in quite inaccessible environments.¹ Such is the case of Kal-e Chendar and of other places of highland Elymais, in which complexes often of religious type have been recognized. The statues found at Kal-e Chendar were soon rightly interpreted as offerings made in a religious milieu, even if nothing more could be added on the complex itself, almost completely archaeologically unknown: thus, for Kal-e Chendar, remoteness and religious relevance seem to pair. The same characteristic was evidenced for two sites of the same area, systematically explored some decades after the discovery of Kal-e Chendar and identified as sanctuaries: Bard-e Neshandeh and Majid-e Sulayman.

¹ See Messina 2020 on this topic.

Excavated by Roman Ghirshman between 1964 and 1967 (the former), and between 1967 and 1972 (the latter), these two sites allowed archaeologists to identify for the first time a peculiar type of religious complex: that of the terraced sanctuary. The one explored at Bard-e Neshandeh is composed by a fortified (?) small residence on a low hillock and two adjacent cult terraces of monumental size.² The religious complex embodied a lower and upper terrace. Both terraces, monumentalized in Hellenistic and Parthian times, have buttressed retaining walls and access stairways: small buildings interpreted as temples once stood on the terraces' top.³ The sanctuary overlooking the modern town of Majid-e Sulayman is known in relevant literature since the 19th century.⁴ The site extends over an area of less than 2 hectares and embodies six adjacent cult terraces of different size.⁵ The largest terrace displays an impressive façade, characterized by a buttressed retaining wall made of undressed stone blocks, with a monumental stairway giving access to the terrace's top, similar to those of Bard-e Neshandeh. According to Ghirshman, a first terrace, dated to the Achaemenid period, was repeatedly widened in subsequent times to reach its monumental setting. Buildings and podia of reduced size, often found at their foundation level, once stood on the terraces.⁶ The sanctuary remained in use up to the Sasanian time, when the buildings on the terraces have been further reduced in size.

Bard-e Neshandeh and Majid-e Sulayman are not isolated cases. A terraced sanctuary was also identified at Qal'e-ye Bardi (or Tall-e Badr), about 18 km northeast of Bard-e Neshandeh. The site, occasionally visited in the 20th century, is still unexcavated and has been preliminarily surveyed in 2009 and 2015 by our expedition.⁷ There, the remains of an ancient cult terrace, overlooking an exhausted streambed, lie north of an ancient fortress (known as Qal'e-ye Lit) built on a hillock. The terrace has buttressed retaining walls made of stone blocks and a monumental stairway. On its top, the ruins of ancient structures of small size can be clearly seen.⁸ The complex, basing on the analogies it shows with the former two terraced sanctuaries, can be dated to the Parthian age. In addition to these occurrences, the presence of other similar monuments yet to be discovered is more than probable.

Our research reveals that the complex of Kal-e Chendar shares many features with the formers –first the presence of monumental terraces, then the adaptation of architecture to landform– and that it can be understood as a religious place, even if it is of a particular type, as the following chapters will unfold. Terraces are thus the prominent parts of ancient sanctuaries mostly dated to the Hellenistic and Parthian periods. Another feature these complexes share is that they have been built in remote and quite unsettled areas.

The sanctuary of Bard-e Neshandeh is located on a small plain at an altitude of 680 m above the sea level (asl) approximately, and at the feet of a low mountain range. The area, arid and desolate, has revealed no evidence of ancient settlements, but overground trajectories in east-west directions, which likely testify to the presence of ancient overground routes, are clearly recognizable. The complex of Majid-e Sulayman lies against a low mountain crest at an elevation of about 300 m asl and, basing on the known evidence, it seems that terraces were built in a rather isolated area. The site of Qal'e-ye Bardi is in an area in which table-topped hillocks and mesa-like buttes alternate with wide corridors that allow movements in almost all directions, at the same altitude of Bard-e Neshandeh, but there are no visible traces of settlements in the area. The complex of Kal-e Chendar is likewise in a remote place, at the end of a valley unsettled and uneasy to reach.

² The fortified residence, called castle, is a building with a central rectangular hall or courtyard surrounded by large rooms, dated to the early Islamic period; however, more ancient phases of occupation of unclear type appear to be dated back to Sasanian and Parthian ages. An extremely small settlement is mentioned by Ghirshman cursorily, but it is hardly recognizable on the ground (Ghirshman 1976, 9-11, fig. 2).

³ Ghirshman 1976, 13-51. The terraces extend for more than 10,000 m², the structures they supported no more than 950 m².

⁴ The place of the sanctuary is locally called Ser Majid, and it is known at least since the mid-19th century, as it has been mentioned by Henry Rawlinson and Austen Henry Layard (Rawlinson 1839, 84-86; Layard 1846, 61-62). But see also, in later times Siroux 1938, 157-159, and Stein 1940, 162-163.

⁵ Ghirshman 1976, 55-146.

⁶ The structures built on the terraces cover an area of c. 970 m², the surface available on the terraces extends little less than 16,000 m².

⁷ Three uncommented pictures were published by Ghirshman 1976, pl. CXXXI-CXXXIII. An image showing the terrace, seen from a qala, was published by Keal 1971, 58 (above). No description of the structures was published. The entry 'Qal'e-ye Bardi (Tall-e Badr)' can also be found in the Encyclopaedia Iranica, vol. II:3, 297-301, s.v. 'Archaeology, iii. Seleucid and Parthian', by K. Schippmann. The first map was published by Messina 2015, 200-201, fig. 14, followed by a report on our preliminary survey (Messina 2018).

⁸ Ancient structures cover an area of around 1,000 m² or little more, the terrace extends for at least 16,000 m² as far as one can see.

It must be observed that in some environments, such as mountainous areas, the presence of ancient settlements is more difficult to detect than in other contexts, such as alluvia. This said, it must be also stressed that the traces left by large ancient settlements, though of low visibility, would have been probably recognized, at least in part, by the excavations and surveys that have been conducted over the years in the areas of the sanctuaries.⁹ However, the fact that they were built in areas lacking large settlements did not make these religious complexes completely unreachable. Although isolated, some terraced sanctuaries (Bard-e Neshandeh, Majid-e Sulayman and Qal'e-ye Bardi) seem to have been placed along trajectories that developed in a network. Such a mountainous network was not as extended and ramified as in alluvia, but it could have worked quite effectively in these environments.

Our research shows that, unlike the other known terraced sanctuaries, the complex of Kal-e Chendar was not central in such a network, rather appearing as the destination of a road branching from a main north-south trajectory. This gives the impression that the main reason to travel to the place of Kal-e Chendar was indeed to exclusively reach the religious complex there located. This gives great relevance to the site. Indeed, if the other terraced sanctuaries, given their location into a network, can be also considered as regional landmarks, the complex of Kal-e Chendar can be seen as a unicum. As proposed in some of the forthcoming chapters, Bard-e Neshandeh, Majid-e Sulayman and Qal'e-ye Bardi marked the nodes of a road system that bridged the lowlands to the highlands and gave access to the Plateau. As such, given the existence of small fortresses adjacent to the terraces, the former sanctuaries were likely also meant to contribute to the control of the territory. They can be thus understood as multifunctional places: as religious complexes, as network landmarks and as outposts to control intermountain roads. Although likewise multifunctional, the complex of Kal-e Chendar has revealed peculiar features.

The results of our research also point to the international ambition of the complex and to the international attitude of the people once frequenting it. Some architectural features of the structures unearthed and several occurrences in the material evidence that has come to light reveal the receptivity of global trends and their adaptation to the local milieu. Global receptivity and adaptation are also witnessed by the dedication of statues, as some of them, because of their quality and size, surely portrayed prominent rulers, reproducing widespread prototypes, and this corroborates the importance and prestige once attached to the complex.

Along with other peculiarities, such an international environment clearly distinguishes Kal-e Chendar from the other terraced sanctuaries of the region and seems to have found some echo in historical records. A further peculiarity of the complex is that religious and funerary function counterbalanced, thus indicating a particular type of sanctuary. Unlike the other sanctuaries of highland Elymais, it seems that at Kal-e Chendar funerary practices had some effects on the cult(s) there performed. Material evidence testifies to the heavy destruction and abandonment of the complex, most probably in the Sasanian period: if, as it seems, such a destruction is related to the religious and funerary values of the place, further relevance is given to the understanding of this counterbalancing from a religious historical perspective.

When the extension of the site is considered, one can see that the complex of Kal-e Chendar is far bigger than a simple sanctuary: monumental terraces, a cemeterial area and small fortresses, built to guard them, marked the landscape of a wide area, and seem to have been part of a large compound. The identification of ruined ancient buildings on the top of the mountains surrounding the Shami valley, in a place known as Char Qal'eh, corroborates such an assumption: a place probably used as an outpost or as a fortress from a given time was in connection with the complex of Kal-e Chendar.

⁹ Basing on what is known of settlement patterns in mountainous regions, it can be deemed that large settlements were more probably located in intermountain valleys, which offered space, resources, and land to be caught for feeding; such is the case of the Izeh plain, where the large ancient city of Mal-e Mir (present-day Izeh) was situated. Sparse settlements of small size –far less detectable– could have been rather placed in other environments, such as rock slopes, hillocks, colluvial fans, and (in general) all places with lithosols or emerging bedrock.

Dealing with the hard legibility of the archaeological context, our experience shows that excavation strategies are uneasy to define in a site like Kal-e Chendar due to different reasons, among which ground conformation, geomorphology and anthropization. Along with risks of other type, such as environmental decay, looting of antiquities and natural hazards, the latter factor endangers the archaeological context deeply. Thus, any future archaeological research should foresee strategies of community engagement that involve local dwellers as community-based stakeholders, to protect the site from all possible risks and to help in the definition of conservation and valorization activities. Future research will surely improve our understanding of such a complex thanks to additional material evidence and to the potential finding of new dedicational contexts. However, an aspect of pivotal importance, which far exceed the relevance of the complex in which it was identified, demand to be more thoroughly investigated: the interference of religious and funerary functions.

Chapter 1

History of Research at Kal-e Chendar

Vito Messina

One of the most intriguing discoveries made in Iran in the last century is surely the one happened by chance in the valley of Shami, about 30 km north of present day Izeh (ancient Mal-e Mir), in a place locally called –and still known as– Kal-e Chendar. There, an archaeological context previously totally unknown was identified thanks to the finding of amazing bronze sculptures and bronze and marble fragments of different scale, which are now kept in the National Museum of Iran (Teheran) and in the British Museum (London). The most famous piece of work of such an assemblage is a bronze statue, now in the National Museum of Iran, portraying a Parthian nobleman. These sculptures are unique in several ways: some of them, for their size and quality, are an exceptional example of the trends developed in Asia in the Hellenistic and Parthian periods; no other bronze sculptures dating to this period have been found in Iran (and more generally in inner Asia); all sculptures witness the importance of a site that is located in a very remote place; the assemblage is patently what remains of a dedicatory context that demands to be thoroughly understood.

What we know of the accidental discovery of the site and its amazing sculptures is based on the reports published by Sir Marc Aurel Stein, one of the most famous explorers and archaeologists of inner Asia, and by André Godard, the head of the Iranian Antiquities Service from 1928 to 1953. Their accounts largely correspond in the description of the events leading to the discovery, but for the year: Godard places such events in 1934,¹ Stein in July 1935.² The latter date is here considered more affordable basing on the narrative of Stein himself, who visited the site between December 1935 and January 1936, few months after the discovery, and published the news in *The Times* in the summer of 1936.³

Both Stein and Godard were made aware of the discovery by local dwellers and authorities. According to the common rumor, the first artwork there discovered was the statue of the Parthian nobleman. Such a bronze piece, larger than life-size and lacking its right arm and parts of the body, was found during the excavation of a narrow ditch to lay the foundation of a house. These building works had been carried out in the area by a group of Bakthiari and Lor nomads further to a governmental policy of sedentarization, inspired by Shah Reza Pahlavi, which was aimed at establishing villages and small settlements in highland regions. One of the areas of Kal-e Chendar, known as Sartu, and located on an extensive debris fan, which probably looked quite promising for agricultural activities, was selected to be settled. The present village extends far beyond such an area, but at that time it should have been far smaller. The exceptional discovery induced workers to stop excavation in that point and to open new ditches for houses' foundations in the nearby.

The finding was reported to the hakim (military governor of the region), Nā'ib Dīn 'Alī Khan Tabrīzi. The latter confiscated the statue, which was transported to his residence in Izeh, and ordered to enlarge the ditch initially excavated to verify the presence of other buried antiquities. During a work of few days (probably two), Nā'ib could find in a trench measuring 6 x 8 m further sculptural fragments of different scale, smaller than the statue's size. These findings clearly witnessed the existence of an archaeological site, but they didn't allow local authorities to understand the importance of the archaeological context. Excavations were stopped officially in the area, even if plundering and other illegal activities were soon started to continue down to present days.

¹ Godard 1937, 290; 1962, 176.

² Stein 1940, 130.

³ The article was entitled 'Ancient ways in Iran. A fourth journey. I. Traces of Alexander the Great' and it was published on 6 July 1936. See Wang 2002, 97.

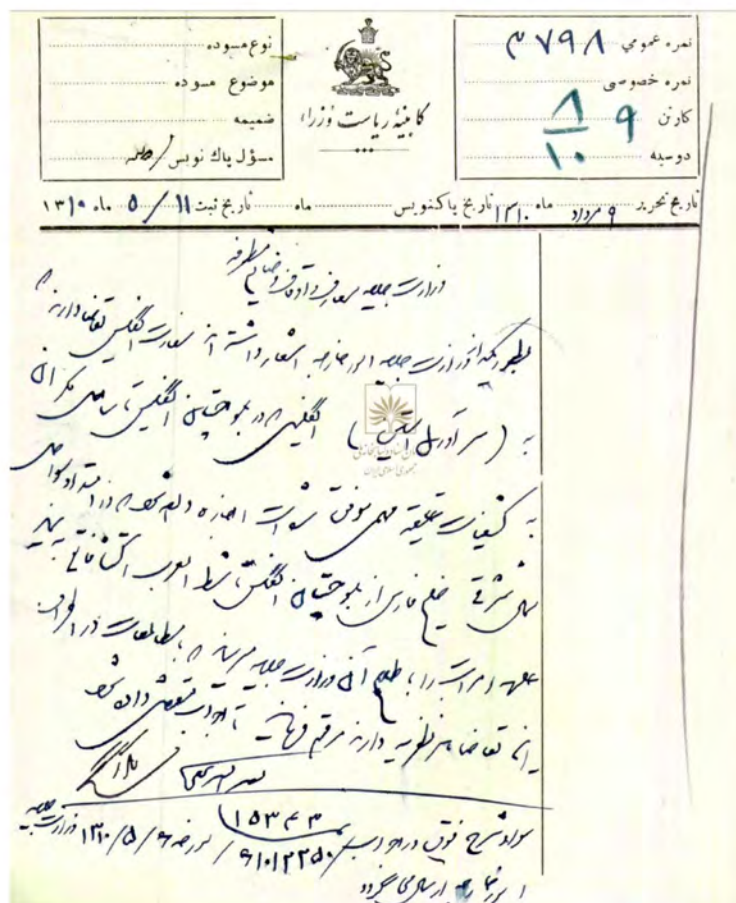


Figure 1.1 - First page of a document addressed to the Iranian Antiquities Service to allow permission for Stein's Expedition to Southwest Iran (archive of the RICHT, courtesy of Negin Miri)

Few months later, in December 1935, Aurel Stein visited the areas surrounding the Izeh plain and was said about the exceptional discovery in the valley of Shami. Stein was traveling through Khuzestan on his fourth expedition to southwest Iran (Fig. 1.1), accompanied by Bahman Karimi, inspector of the Iranian Antiquities Service. Karimi, introduced to Stein by André Godard, had the task to facilitate Stein's journey and to send regular reports to his Institution: thanks to one of these reports the news of the discoveries made at Kal-e Chendar officially spread in the last days of December 1935.⁴ Stein saw the bronze statue in Nā'ib's residence and immediately recognized its exceptional importance. The first famous picture of the statue itself, still lacking some parts, was taken on that occasion (Fig. 1.2). This induced Stein to schedule a visit to Kal-e Chendar and to plan a short period of fieldwork on the statue's finding spot.

Stein and Karimi arrived at Kal-e Chendar in January 1936 and worked for about a week.⁵ A quick topographical survey of the area allowed Stein, one of the best field-surveyor of his generation, to draw the first map of the site (Fig. 1.3). It seems that the excavation works absorbed Stein almost completely, to the extent that he could survey the site only in a very preliminary way: indeed, not all the ruined structures and ancient graves cursorily mentioned in his report are recorded or placed on his map.⁶

⁴ Sarkhosh Curtis, Pazooki 2004, 26.

⁵ Stein 1938, 325; Stein 1940, 141-159. According to his published report, Stein remained on the site for a week (six days) in January. Some captions typewritten on the sheets of a Stein's photo album containing published and unpublished pictures, kept in the British Library, rather indicate February: the duration of stay on the field is however confirmed by all documents.

⁶ Stein 1940, 157-158, plan 10.



Figure 1.2 - Bronze statue of the s.-c. Parthian nobleman in Nā'ib's residence in Izeh (Stein 1940, fig. 46)

Stein could recognize the remains of decayed walls in undressed stones, meant to support cultivation terraces in his opinion. The trench already opened by Nā'ib', whose limits remained visible, was cleared and enlarged. Stein and Karimi report to have found a ditch for the stone foundations of an ancient rectangular enclosure, roughly west-east oriented, measuring 12.5 × 23.5 m, and exceeding the limits of Nā'ib's trench (Fig. 1.4). As a matter of fact, however, when looking at the excavation plan or at the picture taken during fieldwork, it is possible to detect the lack of stone materials in large parts of such a ditch.

Inside the enclosure supposedly identified, a baked brickwork broken into three parts was found along with stone bases and baked brick column fragments. Stein assumed that the bronze statue and other sculptural fragments there accidentally found should have been inside the enclosure, notwithstanding that three stone bases were outside.⁷ Ashes and burnt wood, found in the trench, were interpreted as traces of a wooden roof destroyed by a fire. Given that burnt material was exclusively found along what Stein had interpreted as walls' foundations, he postulated, consequently, that such a wooded roof only covered the perimetral parts of the enclosure, leaving its centre open to the sky. Pictures taken during fieldwork reveal that the area was excavated down to a depth of less more than 1 m (Figs. 1.5-1.7). Stein assumed that the statues there found originally stood inside the enclosure –notwithstanding that this was supposedly open to the sky in its centre– and that such a complex could be interpreted as a shrine. The local discoverers of the sculptures informed Stein that they had found sculptural fragments also in a dump outside the shrine supposedly identified by him. However, it cannot be ruled out that they themselves collected statues' fragments from a wider area.

⁷ Stein 1940, 141-159.

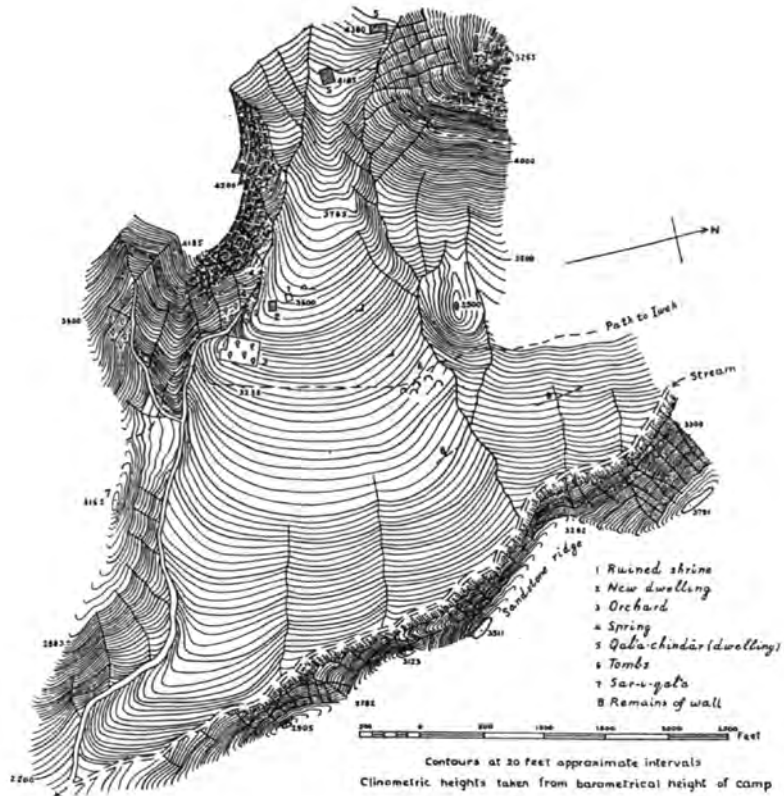


Figure 1.3 - Map drawn by Stein of the debris fan at Kal-e Chendar and the area of Sartu (Stein 1940, pl. 10)

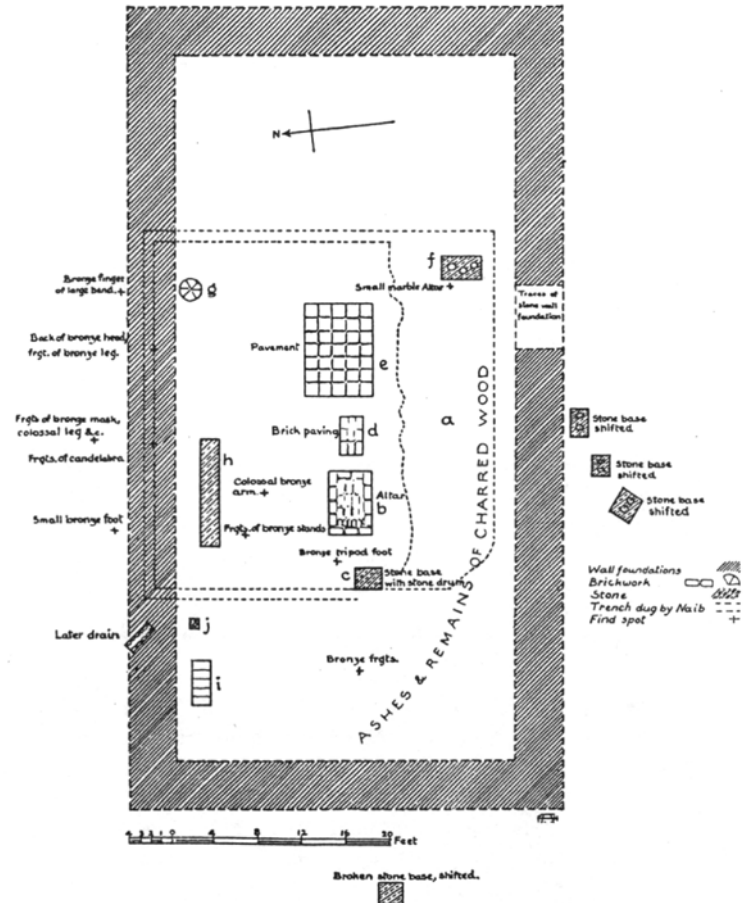


Figure 1.4 - Sketch plan of the shrine supposedly identified by Stein and Karimi (Stein 1940, pl. 11)



Figure 1.5 - Local fieldworkers in the Stein and Karimi's trench seen from North-East (Stein 1940, fig. 52)



Figure 1.6 - Local fieldworkers in the Stein and Karimi's trench seen from South-West (Stein 1940, fig. 53)



Figure 1.7 - A local fieldworker from North-East (courtesy of the British Library)

Other sculptural fragments were found during Stein and Karimi's excavation. Thanks to an agreement with Iranian authorities, Stein was able to ship these and other finds to the British Museum in London. Stein also added to these finds some statue fragments discovered by the local dwellers, which the military governor had apparently not confiscated, and which remained, along with other things, at Kal-e Chendar.⁸

The results of Stein and Karimi's excavation are in the end quite unclear, and the reconstruction proposed in the Stein's report is questionable, if not hardly shareable. Anyhow, although incoherent for its outcomes, such an excavation allows us to say that the context of finding is evidently that of a dedicational complex. The finding of statues and statues' fragments, of a platform made of baked bricks and of stone bases is enough to corroborate such a hypothesis. It is thus interesting to note that bases are higher in number than the statues found. This, along with other evidence, such as the fact that the statues were clearly smashed down in antiquity, induces one to postulate the deliberate and heavy destruction of such a complex. It is hard to imagine a built environment in the place where Nā'ib' opened the trench that was later enlarged by Stein and Karimi: for different reasons, this more logically appears as an open area, with scattered remains of smashed statues (see chapter 6.3). If a building existed in the nearby, to house the statues, this did not correspond to the statues' finding spot; it cannot be excluded that it could have been very close, however. Stein also mentions the presence of burials, but the latter are not so precisely described, so that it has been impossible to understand their relationship with the area of the statues, if any.

André Godard surveyed the place later on and ordered to transfer the statue and sculptural fragments kept in Izeh to the National Museum of Iran in Tehran. In his report, published many years later, he basically describes the work carried out by Stein and confirms the religious value attached to the place. Worthy of note in his interpretation of the site is also the mention of graves that he believed to have been part of a cemeterial area,⁹ as the latter observation is largely corroborated by our research. In any case, the report published by Stein remained the only source of information on the site of Kal-e Chendar for many decades.

Such a report was based on the notes he took on his diaries almost daily, accompanied by a series of pictures of the fieldwork (of which only two were published) and a contour line map of the area. These documents are now kept in the Bodleian Library (Oxford) and in the British Library (London). Stein's handwritten diaries can be consulted on microfilm in the Bodleian Library, where even 11 black and white pictures taken at the site are preserved, while 12 black and white pictures –the same of the Bodleian plus one– are collected in an album shelved in the British Library. The unpublished materials don't add too much to what was published in the Stein's report.

Nobody returned to the site to investigate it systematically.

It may seem surprising that the amazing discoveries made by chance at Kal-e Chendar were not followed by further excavations. Even the results published by Stein didn't give the way to scientific research on such a puzzling archaeological context. As a matter of fact, however, no other works have been planned since that time. One reason the site of Kal-e Chendar has been almost ignored for such a long time can be probably seen in its remoteness. Up to less than 20 years ago, when a modern road was built to access the Shami valley, the only way to reach the site, at an average elevation of 900-1000 m above the sea level, was by quite impervious routes and paths. Not that much uncomfortable for nomads very well accustomed to these places, but very difficult for any kind of logistics allowing the transportation of tools, instruments, and all other goods necessary to an archaeological expedition staying on-site for long periods. Stein and Karimi themselves remained at Kal-e Chendar only for a few days. Even today, the organization of an expedition at Kal-e Chendar is not an easy task. But in the end, it is at least possible to move from and to Izeh by car in less than 2 hours.

⁸ In 1937, most of them returned to Iran; however, 35 small finds, including 14 fragments of bronze sculptures, remained in the British Museum (Lindström 2021, 180-181; 2022, 49-50).

⁹ Godard 1962, 177-180.

The discoveries made at Kal-e Chendar have been continuously recalled in scientific literature, over the years, especially with the aim to describe and to understand the sculptures there found; the archaeological context remained instead largely neglected. It is not by chance that the exact place of the sculptures' finding and of the Stein and Karimi's trench had been long forgotten. For this reason, our joint expedition has planned systematic research in archival contexts containing the documents originally produced by Stein, with the aim to gain information on the place of finding (if any), and to conduct a preliminary survey in the area. The first challenge was to identify anew the spot of the ancient trench, so to schedule regular excavation campaigns.

Chapter 2

Survey At Kal-e Chendar

Jafar Mehr Kian, Vito Messina

Further to the examination of the Stein's published and unpublished documents we planned a field survey in the Shami valley, in the area of Kal-e Chendar, to locate the spot of the sculptures' discovery and of the Stein and Karimi's trench. We visited the site for the first time in 2009, but could start survey in 2012, during the 5th campaign of our joint expedition.¹ Our survey has been continued in the subsequent years, along with selective excavations in the surveyed area (see chapter 6). We conducted an extensive survey once we had been able to identify approximately the place of the former discoveries –not an easy task indeed– and to roughly delimit the area of archaeological interest. We decided to avoid intensive survey because of the almost total lack of surface records: over the years of our fieldwork, only sporadic findings could be detected, but no small clusters or assemblages of materials. Such a lack of records, which didn't allow us to collect data to be processed both spatially and statistically, is due to the ground morphology, to the soil composition and to the geological setting of the area (see below).

Extensive survey was planned and conducted with the purpose of updating cartography, deriving topography (see chapter 4), and identifying, thanks to different approaches, surface anomalies that could be related to buried ancient structures or ruins. The study of the geological setting of the valley (see chapter 3) and of the ancient landscape (see chapter 5) were likewise conducted on such a basis and further to the outcomes of the extensive survey. The method we followed was to combine observations made remotely, on already existing products (such as ancient and modern cartography, thematic cartography, and aerial or satellite imagery) or on products created anew (such as DTMs or DEMs), with observations directly made on the ground thanks to the systematic exploration of areas of interest. Our aim has been to geo-reference all the anomalies so far detected.²

According to the 'Geological Survey of Iran', the Shami valley has been formed in different eras. The tectonic and structural setting of the Iranian plateau, a part of the Alpine-Himalayan orogenic belt, can be subdivided in ten structural units, based on certain geological features, which corresponds in south-west Iran to the Bakthiari range (part of the Zagros system). The mountains and anticlinal valleys in the area of Shami originated for the most in the lower and middle Cretaceous, even if more ancient formations, like in the Shami valley itself, are also attested. In the maps produced by the Geological Survey of Iran, Palaeocene, Eocene, Oligocene and Early Miocene formations (namely Pabdeh, Gurpi, Asmari and Gachsaran), mainly composed by marls, shales and orbitolina limestone, can be recognized: these originated for the most calcareous lithosols but also shallow soils or orthents of different colours.

The area of Kal-e Chendar is characterized by the presence of debris fans of colluvial origin. Due to the valley orogenesis, the ground morphology does not facilitate the comprehension of archaeological stratigraphy –as our excavations showed unmistakably (see chapter 6.2)– because soils and archaeological strata lay on a sloping bedrock. The soil is everywhere mixed with rubble of different sizes, pebble, and other debris, being classifiable as a lithosol. Lithosols didn't facilitate the formation of anthrosols, unlike in other geological contexts, such as for instance alluvia of depositional origin; such a ground morphology, basically characterized by sloping terrains or fans with close-to-surface bedrock, heavily hindered the stratification of archaeological materials and their accumulation on

¹ We were working in the Izeh plain at that time, to laser scan the Parthian rock carvings located in the area, especially the one at Hung-e Azhdar (Messina (ed.) 2015).

² Preliminary results of our first survey at the site have been published right afterwards (Messina, Mehr Kian 2014).

surface or in the subsurface. Anthrosols are thus hard to identify,³ and surface records are almost absent, or barely detectable when present.

Our first challenge was to locate the place of the sculptures' discovery and of the Stein and Karimi's trench, which had been the enlargement of a previous trench opened by Nā'ib Dīn 'Alī Khan Tabrīzi, the military governor of the region (see chapter 2). The valley of Shami and the village of Kal-e Chendar are clearly marked by road signs. The modern settlement can be thus reached easily by car. However, once there, it is uneasy to locate on the ground the area investigated by Stein and Karimi basing on the map drawn by Stein himself. Such a map is not geo-referenced, and the scale of publication doesn't allow an observer to plot the spot of the ancient trench. In addition, the limits of the trench are not visible on the ground because of the soil composition. Furthermore, no coordinates (geographical or cartographical) are indicated in the Stein's map (Fig. 1.3). This is the only piece of information available, however, as there are no larger or more detailed maps in the documents kept in the British and Bodleian Libraries.

The only way to identify the place of excavation and its environments was thus to recognize landscape features thanks to the observation of the pictures Stein had taken during his fieldwork (Figs. 1.5-1.7). Indeed, the valley landscape in the area of Kal-e Chendar is characterized by a peculiar landform: hillocks, peaks, slopes and mountain lines are easy to recognize both for their shape and for their relative position. In few words, they are so peculiar that one can easily distinguish their forms on-



Figure 2.1 - Comparison between the photographs taken by Stein in 1936 (left) and the photographs taken during our 2009 survey (right) (Messina, Mehr Kian 2014, fig. 2)

³ Anthrosols originated by human occupation are formed from organic components, mostly derived from dejecta and from the decay of daily-use material (pottery) or building material: for this reason, their texture, hydrological, and reflective properties differ significantly from pedogenic soils, making them well visible by ground surveys and aerial or satellite imagery. Being aware that the spectral signatures of decayed structures and anthrosols can change considerably during the year, an observer could be able to identify the presence of archaeological remains by the detection of the soil's colour, density, and texture. On anthrosol detection in mountainous areas, see Messina, Mehr Kian 2019a.

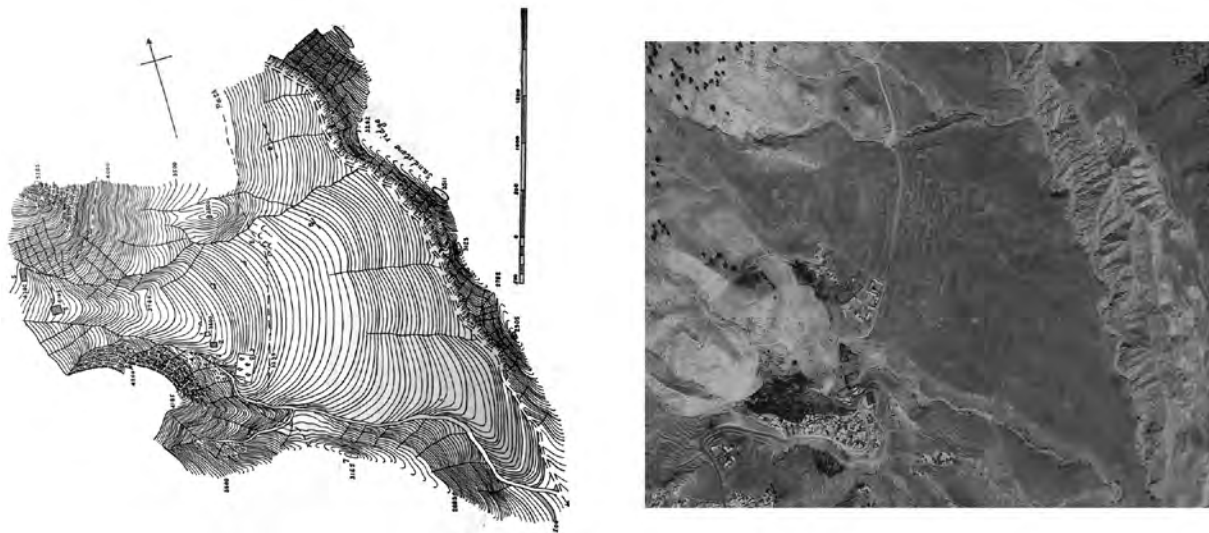


Figure 2.2 - Comparison between the map published by Stein (left) and a 2011 GeoEye1 scene (right)
(Messina, Mehr Kian 2014, fig. 3)

site and on the background of Stein's pictures to find matches between them. Such an examination allowed us to circumscribe the possible area of the ancient trench. The comparison between the 1936 photographs and the photographs taken during our first visit at Kal-e Chendar, in November 2009, clearly reveals their matching features (Fig. 2.1).

To corroborate our first identification of the area in which Stein and Karimi opened their trench, we also examined remote sensing data. To do so, we made comparisons between the Stein map and satellite imagery of the Shami valley (Fig. 2.2): images have been acquired once local coordinates were determined by GPS receivers during our first visit. Once the area was surely identified, preliminary activities were carried out in order to schedule systematic excavations: we conducted multispectral analysis of satellite images to detect surface and subsurface anomalies and, possibly, to identify buried structures; we detected ancient structures and materials thanks to ground survey; we geo-referenced the site position with high accuracy; we derived a new map thanks to a multi-temporal and multi-level approach in a GIS environment.

Remote sensing analysis focused on anomaly detection in multispectral imagery (based on RX algorithms).⁴ This produced a series of RGB and panchromatic frames of the acquired scene, which evidenced regular alignments and forms: in particular, three large structures, having a polygonal perimeter, became visible to the north of the modern village and on both sides of a modern road running north-southwards at about 980 m asl (Figs. 2.3-2.4).⁵ Their extension and layout excluded the possibility that they were multiroomed buildings in ruin.

Based on the anomalies so far detected, the survey, initially conducted over an area of about 35 ha, was further expanded over the years. Indeed, the recognized area of archaeological interest extends for at least 50 ha, over a triangular debris fan delimited on the north and south by the beds of two streams: these, now exhausted, once flowed west-eastwards into a small river, delimiting the site to the east. Such a river is locally known as Rud-e Shami. The debris fan approximately ranges from 920 to 1040 m asl, gently sloping in its central part, where is crossed by the modern road that reach the village at present and is quite parallel to the Rud-e Shami.

The area surveyed thanks to remote- and on-site observations revealed that the large ancient structures partially identified on multispectral imagery were made in undressed stones, and that they

⁴ Non-linear anomalies have been detected on a GeoEye1 orthorectified scene, acquired on purpose in 2011.

⁵ See in particular chapter 5.2 for the remote sensing analysis of the Kal-e Chendar area.



Figure 2.3 - Surface anomaly detection on a filtered 2011 GeoEye1 scene



Figure 2.4 - Detail of the area of Terrace 4 on a filtered and balanced 2011 GeoEye1 scene

could be identified as monumental terraces, placed at different elevations according to the natural slope of the fan. Cultivated fields extend at present over the whole area and are delimited by low enclosures as well made in undressed irregular stones, which are sometimes superimposed on the remains of ancient walls: the latter are, for the most, retaining walls delimiting terraces. Five ancient monumental terraces have been recognized: the Upper Terrace, Terrace 2, Terrace 3, the North Terrace and Terrace 4.⁶

The Upper Terrace –that we also called Stein-Karimi Terrace– corresponds to one of the areas evidenced by remote sensing observation and it extends for about 8,000 m². The terrace has an irregular quadrangular perimeter, and it overlooks the south stream (Figs. 2.5, 4.2). The comparison between satellite imagery of the area and the map drawn by Stein clearly indicates that the ruined structures found in 1936 once stood on such a terrace; furthermore, the terrace's south-east corner is now occupied by one of the modern houses of the village that partially overlap the archaeological site. One of the most impressive ancient walls recognized during our survey is the Upper Terrace's south wall, a retaining wall that appears to be more than 90 m long and, in some points, up to 3 m high. The

⁶ Terraces are here preliminarily described. For more detailed information, see chapter 6.



Figure 2.5 - The Upper Terrace (or Stein-Karimi Terrace) from Qal'eh-ye Vali



Figure 2.6 - Stone squared column base loose on surface of the Upper Terrace

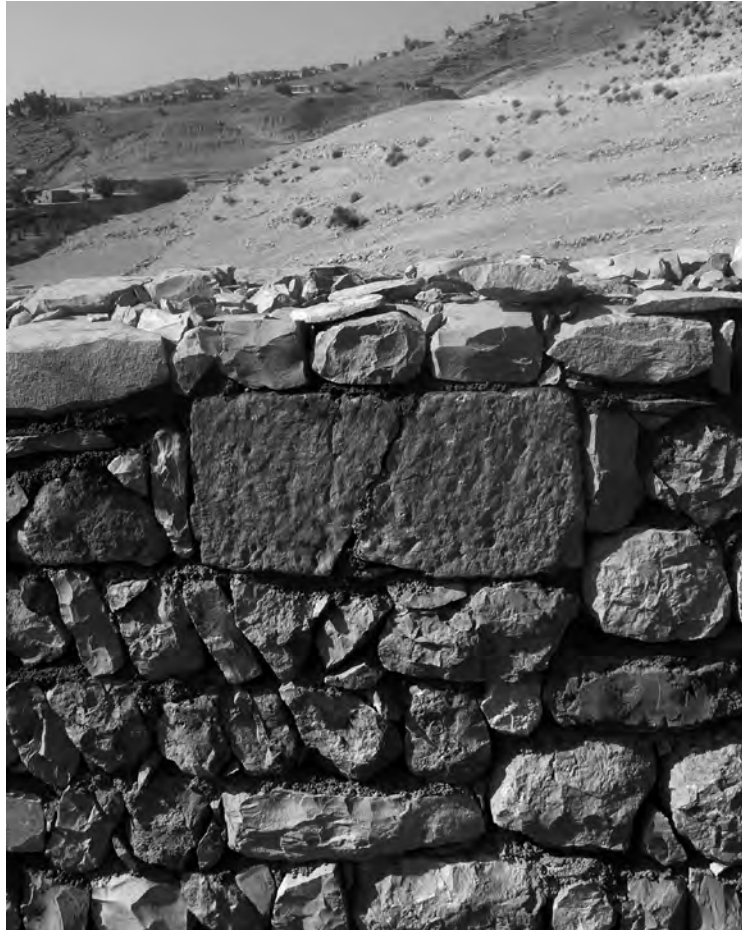


Figure 2.7 - Ancient stone block of masonry reused in the wall of a modern house at the feet of the Upper Terrace

wall's façade had collapsed, probably already in ancient times, because of the pillaging of stone blocks; however, it is still possible to see that its lower part is made by a row of huge irregular boulders, onto which more regular stones, of smaller size, are arranged in courses.

It seems that this wall was built to regularize and to retain the terrain that corresponds to the topsoil of the terrace: for this reason, the wall's façade is easy to recognize, being still exposed by the stream's bed. The fact that this wall is ancient is confirmed by the relation it has with the ancient remains unearthed by Stein and Karimi in 1936. The terrace's wall retains the same filling into which the foundations supposedly identified by Stein were laid; for this reason, the terrace's wall is more ancient of the antiquities found on the terrace's top. The other walls of the Stein-Karimi Terrace are more difficult to see, except for the east wall, which can be clearly seen at the terrace's southeast corner, where it joins the south wall. In this area, where both the east and south walls have been used as foundation for a modern house, a squared and a rounded ancient column bases have been recognized (Fig. 2.6), along with other ancient stone blocks of masonry, which have been re-used in the walls of modern houses (Fig. 2.7). A further rounded column base was found loose on surface.

The latter findings are particularly important for they testify to the fact that a building stood on the top of the Upper Terrace, at about 1015 m asl, and generally confirm the preliminary results of Stein and Karimi's research. However, the possibility that many other ancient elements, re-cut or broken on purpose, were used during the building of modern houses and enclosures cannot be ruled out.⁷ These elements are indeed surely recognizable when they are in a quite good state of preservation, because of their size –which, as a rule, is larger than the other stones used in the courses of modern walls– and

⁷ We could recognize, file and measure several ancient blocks reused in modern walls (see Messina, Mehr Kian 2014, 71-73).



Figure 2.8 - Undressed stones' corner of a small terrace or ruined building north of Terrace 3

polished surface, but it become almost undistinguishable when they are broken into small pieces or re-cut. It will not be surprising to discover that the site had been used as an open-air quarry of easy-access stone materials overtime.

North of the Upper terrace, a squared terrace roughly of the same size can be clearly seen both from the satellite image of the site and basing on ground morphology (Terrace 2). This is next to the Upper terrace, and despite its slightly different orientation, it could have been part of the same complex, given that their top grounds are almost at the same elevation (Fig. 4.2).

About 60 m north-east of the Upper Terrace, the corner of a third terrace (Terrace 3) still emerges from the present ground level, as well as its well-preserved east façade, which seems built following the same technique of the Upper terrace's south wall. Terrace 3 (Fig. 4.2) is slightly differently oriented, however, for it follows the natural conformation of the ground: its top, corresponding to one of the areas evidenced by non-linear anomaly detection, is about 9 m lower than that of the former terraces and revealed the presence on the surface of a wide number of baked brick fragments. The terrace's size cannot be determined, for its south and west fronts are unknown, but it would be not surprising that, at least westward, it almost reached the limit of Terrace 2.

Terrace 4 (Fig. 4.4) is one of the most remarkable terraces of Kal-e Chendar. It extends for about 5,200 m² on a square layout and is the easternmost structure identified by our survey, probably being the furthest monumental terrace built at the site toward the Rud-e Shami. The ground morphology seems to indicate that a small structure was built at the terrace's centre, but the latter has not been yet thoroughly investigated.

Terrace 5 (or North Terrace) is the northernmost terrace identified by our survey, even if the presence of other terraces further to the north, beyond the limits of the surveyed area, cannot be ruled out. The North Terrace overlooks the north stream (Figs. 4.3, 6.71), and it roughly follows its course. The only feature of the terrace still well visible is its north retaining wall, and this could have been the westernmost structure in a series of three subsequent terraces developing toward the Rud-e Shami.

The terrace's size can hardly be estimated. At the north limit of the terrace, observation of the ground conformation, made on satellite imagery, allowed us to postulate the presence of buried structures; such an assumption was corroborated by observation made on the ground: a large and well visible stone assemblage was indeed identified as the result of a human intervention. It was clear that such an assemblage was purposely positioned in that place (evidently in modern times) to cover, and hide, a quite extended surface –the excavation of the area, once such an assemblage had been removed, has confirmed our assumption (see chapter 6.5).

Remains of other structures of unclear purpose have been recognized in other spots of the surveyed area, also east of the modern road. In particular, the corner in undressed stones of a further small terrace or ruined building can be clearly seen north of Terrace 3 (Fig. 2.8), while the walls of two other buildings are still preserved south of the north stream, not far from the point where it flows into the river. These remains are so badly preserved that it is impossible to understand their function and context, however.

It is worthy of mention that we could recognize several tombs of different types. The presence of burials had been already mentioned by Stein, although cursorily, and recalled by Godard, who rightly pointed to their relevance. Our survey shows that they are indeed a major feature of the site. Tombs seem located on the whole area surrounding the terraces, but they have been particularly plotted east of the modern road. Tombs are underground saddle-roofed chambers, built in undressed stones, or simple graves. They generally have been built adapting their layout to the ground's slope, even if they could also be placed against rock cliffs or on the streams. Chambers are easily recognizable despite their bad state of preservation; graves can be instead identified only when they have been opened and then filled with rubble and stones to avoid incidents during agricultural works, or to hide unauthorized excavations. Sometimes, the stones that fill the graves are part of a collapsed roof. Over the years, we could recognize at least 44 tombs –some of them have been excavated (see chapters 6 and 7)– but it would not be surprising to see that they are hundreds, thanks to future research at the site.

Our survey gives clear indications on the wide extension of the site and on the monumental layout of some of the structures recognized. The latter are large terraces built with the aim to regularize the terrain's slope and to support buildings made of roughly cut undressed stones and/or baked bricks. Of these buildings nothing remains, except for re-used or loose on surface stone blocks of masonry, bases of statues, column bases and brick fragments. This seems to indicate that the floor of ancient buildings now lost must have corresponded, approximately, to the present ground level. Ancient buildings' decayed walls and columns probably stood in ruins for a long period, having been progressively plundered over the centuries. However, Stein and Karimi's excavation suggests that their layout could be tentatively and approximately traced basing on their foundations when the latter are unmistakably identified. This is also shown by our excavations. The discovery of dedicatory stone or bronze sculptures attests that at least the Upper Terrace supported a temple or sanctuary, however our excavations lead us to suppose that structures built for cult purposes and of smaller size were also placed elsewhere (see chapter 6).

Basing on the features we could recognize, it may be inferred that the small enclosure unearthed by Stein, if existing, was only the residual part of a cult complex built on the Upper Terrace, and surely not a major building. Furthermore, if the religious character of the buildings once standing on the terrace is evident, such an enclosure could be hardly interpreted as a shrine: it is undersized if related to the number and quality of the sculptures discovered; it is likewise too small for the terrace's extension; the ancient architectural elements there plotted seem rather related to a more complex and larger building placed not afar. It also appears that the enclosure identified by Stein was in a quite peripheral part of the terrace.

The trench opened by Stein and Karimi cannot be exactly located on the ground, for its limits cannot be easily distinguished in the terrain. However, because of the comparison made between the 1936

and 2009 photographs, and because of the position of some modern structures (now in ruin) on the terrace's top, it is possible to estimate that the ancient trench has been opened in an area approximately corresponding to the very east limit of the terrace (and surely not in its centre). The landscape on the background of the 1936 pictures can be framed only from the backyard of a modern house that still stands on the south-east corner of the terrace: if the camera is placed in other spots the landscape changes. In addition, we could recognize two of the statues' bases mentioned by Stein in the wall of a modern storage place built in the backyard of the same house. These bases had been evidently reused to build the storage's walls after the excavation of Stein and Karimi. The walls of such a storage place interestingly mark a perimeter that corresponds quite precisely to the orientation and size of the trench excavated by Nā'ib' and later enlarged by Stein and Karimi (as it is shown on Stein's map itself), a trench whose limits were still well visible even after the opening of Stein and Karimi's excavation (see chapters 2 and 4, and Fig. 4.2). This allows us to postulate that such a storage place had been built, soon after the end of Stein and Karimi's work, in the place where the sculptures were accidentally found, and the initial trench was opened to be later enlarged by Stein and Karimi themselves.

Finally, the archaeological context described by Stein appears heavily disturbed by quarrying operations and makes his assumption regarding the original placement of the discovered sculptures inside a rectangular enclosure doubtful. Basing on his report it seems more probable that the fragments and bronze statue were accidentally discovered in relatively unstratified layers (on an open area?), having been displaced from their original position in antiquity, during the temple's destruction or soon thereafter. The fact that these statues could have not been housed inside the supposed enclosure when they have been smashed down seems also confirmed by the reconstruction proposed by Stein himself: that this small building was likely covered with a wooden roof along its four walls and left open to the sky in its centre.

Basing on chance findings, on the results of previous excavations and observations, but particularly on the archaeological features preliminarily evidenced by our survey, it may be proposed that the religious function attached to the place since the initial discoveries, although of utter importance, was not the only characteristic of this ancient dedicatory complex. The monumental terraces we could identify during our survey, understandable for their typology and findings as structures of religious type, appear as the most interesting feature of the complex along with a wide cemetery apparently extending over the entire surveyed area, for about 50 ha. Indeed, the archaeological complex discovered at Kal-e Chendar appears to have been of a particular type: at least since a given moment, a monumental cemetery, of which only few tombs have been recognized up to now, coexisted with the monumental terraces.

Other areas, surrounding or overlooking the part of archaeological interest, have been likewise surveyed, although in a very preliminary way. They are particularly addressed in chapter 5. Two structures in ruin are worthy of mention with relation to the terraces and cemetery. These are two small fortresses likely built to protect the area from the south, as this was probably the main accessway to the site in ancient times. The first ruined fortress, locally called Qal'eh-ye Vali, was built on a small hillock overlooking the south stream and the Upper Terrace at an elevation of 1070 m asl. This is a small outpost built in undressed stones and extending for about 200 m² only, whose inner space is divided into rooms. Not so far from the former, immediately to the east of the modern road, there are the remains of a further small fortress, called Qal'eh-ye Shor Khoda. As the previous, this building is likewise located on a place higher than the surrounding area, at about 965 m asl. A modern building overlaps the remains of the ancient. It is hard to date these structures precisely, but scanty surface potsherds there found suggest that they were used at least since the Parthian period (if not earlier). The presence of two outposts guarding the access to the site clearly points to its importance in ancient times. This is useful to evaluate the prestige attached to the place, but it is also puzzling when considering that our research evidenced no settled areas in the nearby.

Almost all the scholars dealing with the exceptional discoveries of Kal-e Chendar, first Aurel Stein and André Godard, pointed to the remote location of such a cult place as a feature difficult to explain,

along with the lack of a settled area.⁸ Others rather proposed that if a settlement existed it could be imagined only as a very small place for the dwelling of the sanctuary personnel.⁹ Be that as it may, it is evident that the terraces and cemetery appear far isolated from inhabited areas. Such an observation, supported by the lack of surface records and archaeological materials, as already noticed, must also be framed in the context of a very low visibility of ancient human settlements in mountainous environments, however. As briefly pointed above, the ground morphology and soil composition hinder the reconnaissance of anthrosols and archaeological strata: thus, the reconnaissance of settled areas in such an environment is far more difficult than in other ecological niches, such as alluvia. The lack of surface records and the low visibility of the human presence is not an indisputable proof for the absence of a settlement near the site. Even if all evidence points to the absence of settled places close to the surveyed area, it is not possible to exclude that originally there were inhabited points of which no traces remain (see the discussion on possible locations for inhabited places in chapter 5.4).

The archaeological site of Kal-e Chendar is anyhow far more extended and complex than a simple shrine, as also our excavations proved unmistakably. Monumental terraces and a wide cemetery guarded by fortresses marked the landscape of an extensive unsettled (?) area and appear to have been part of a composite system. Indeed, we identified a further built ruined area on the top of the Bilevah peak, in a place that overlooks the site at an elevation of 1707 m asl, locally know as Char Qal'eh. There, massive structures built in undressed stones but also in very well cut and polished stone blocks demand further investigation: these were probably used as a fortified place from a given moment, but it would not be surprising to see that they also belonged to multifunctional buildings.

⁸ See for all Stein 1940, 156.

⁹ e.g. Schippmann 1971, 230.

Chapter 3

The Geology and Geomorphology of The Shami Valley

Marco Giardino

Within the complex framework of Inner Asia, a comprehensive approach is needed for interpreting the relationships between humans and nature within the sacred landscape of the Shami valley, in the Central Zagros mountains. This approach requires a multiscale, spatial-temporal analysis of geological, geomorphological, and geographical constraints to the archaeological findings.

From a geological perspective (Fig. 3.1), the study area, at a continental scale, is situated within the Zagros Orogenic Belt, which forms part of the Alpine-Himalayan orogenic system. The entire orogenic belt is longitudinally divided into various tectonic zones based on their structural patterns and stratigraphic successions. Specifically, the Central Zagros mountains are a component of the Zagros Fold-Thrust Belt.¹ On a continental scale, the ZFTB is located in the outer part of the Zagros active orogenic wedge, exhibiting extensive active crustal deformation and intense seismic activity along a northwest–southeast direction, spanning approximately 1,500 km.²

The ZFTB represents the deformed state of the Zagros sedimentary basin, which originally extended across the northeastern Afro-Arabian continental margin and underwent the Early Cretaceous to present Zagros orogeny.³ Stratigraphic data indicates that the ZFTB comprises a sequence of diverse late Neoproterozoic–Phanerozoic sedimentary cover strata, ranging from 7 to 12 km in thickness and consisting of alternating incompetent and competent layers, overlaying the Precambrian crystalline basement.⁴ The ZFTB exhibits a complex structural setting, featuring out-of-sequence, basement-rooted thrusts that have breached the cover/basement interface. Utilizing incompetent cover strata for propagation, these thrusts cut across the cover structures, creating new folds superimposed upon the pre-existing structures.

From a geographical point of view, at a regional scale the study area is part of the central Zagros, and the main territorial constraints are the modern cities of Kermanshah and Shiraz. Here, the geomorphological landscape is characterized by an alternation of valleys and ridges, sometimes aligned regularly in a northwest – southeast direction. Elsewhere, the ridges can also have arcuate or cuspidate shapes, with divergent alignments (Fig. 3.2).

For a comprehensive analysis at the local scale, it is crucial to compare geological data from the literature with on-site geomorphological evidences and interpretations from remote sensing.

From a geological perspective, the area is represented within sheet No. 20821 E, 'Kuh-e Kamestan' of the Iranian geological map at a scale of 1:1,000,000, produced on behalf of the Iranian Oil Operating Companies. The site of interest is located northeast of the Kamarun anticline, corresponding to the monocline relief of Kuh-e Bilevah and is bordered to the west by the Kamestan anticline.⁵

From a geological-structural point of view, locally, the typical characteristics of the Zagros orogenic chain are highlighted here, with folds and faults accommodating a pronounced crustal shortening from northeast to southwest. In particular, the Kamarun anticline can be interpreted as a narrow

¹ ZFTB; Alavi 2007.

² Gürbüz, Farzipour Saein 2019.

³ Alavi 2004.

⁴ Alavi 2007.

⁵ The name Bilevah or (Bil Ābād) is reported on the Iranian topographic map of the area (NGO 2002, sheet 5954III Keveshk, scale 1:50,000), while the name Kuh-e Bilaba is used in the geological map (Iranian Oil Operation Company 1967, sheet 20821E Kūh-e Kamestān). The name Bilevah or Bilawa is used in the archaeological literature on the site.

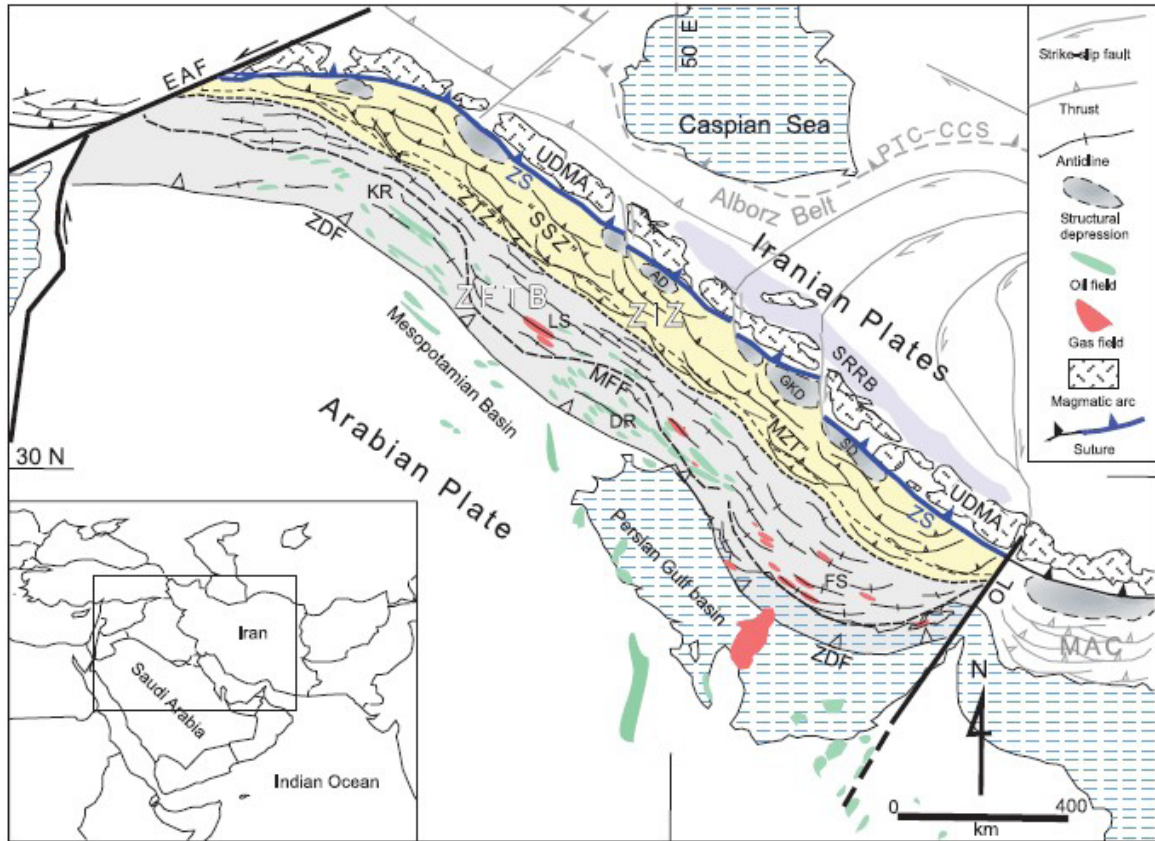


Figure 3.1 - Geological sketch map of the Middle East (modified from Alavi, 2007) for tectonic setting of the Zagros orogenic belt at the continental scale



Figure 3.2 - Satellite view (Landsat Image from Google Earth-Pro App, retrieved on 29/12/2023) of the Central Zagros mountains for regional geographical setting of the Kal-e Chendar sacred landscape

and structural discontinuities that transition eastward to the anticlines of Piyun and Kamestan, revealing the deeper units of the regional stratigraphic succession (Fig. 3.3).

The local stratigraphy reveals particularly interesting influences on the landscape morphology. A cross-section from ENE to WSW across the Shami valley exhibits an asymmetric morphological profile, with the left side being less elevated than the right side. On the right slope, the inclined layers of Cretaceous carbonate of Sarvak and Ilam Units (calcirudites with intercalations of marls) outcrop, transitioning unconformably to the thin dark pelagic marl layers of the Gurpi Formation, which emerge at the valley floor, and to the overlying varicoloured calcareous marls of the Padbeh hemipelagic unit. Due to their moderately incompetent nature, these two units are attributed to a marked brittle-ductile rheological behaviour,⁶ locally evidenced by their intense tectonic deformation and low resistance to erosion. These characteristics contribute to a certain instability of the slopes on the left side of the Shami valley, endowed with greater relief energy compared to the opposite side, for both structural reasons (as it is on the monocline front of Bilevah) and due to the outcrop at the summit of the relief of the powerful Oligo-Miocene Asmari Unit, consisting of thick limestone layers with brittle rheological behaviour (Fig. 3.4-3.5).

The morphostructural and morphostratigraphic features appear to have exerted a profound influence, first on natural events and subsequently on human activities that have shaped the development of the landscape of the Shami valley.

At a local scale, the archaeological site extends at least for 50 ha on the western slope of a narrow valley and has the shape of a triangle with its narrower vertex to the west, being apparently delimited on the north and south by the beds of two streams, now dried up, flowing west-eastwards into a small river flowing north-southward, and delimiting the site on its eastern side: the so-called Rud-e Shami (Fig. 3.6).

In this triangular section of the right (western) slope of the Shami valley, there are coarse surface deposits consisting of heterogeneous and heterometric rocky blocks, interpreted as the accumulation body of a gigantic landslide detached from the Bilevah mountain. This is evidenced by the concavity of the upper slope (up to 500 m high), culminating in a steep, arch-shaped detachment scarp affecting the Asmari limestones in the upper, west-facing cliff of Bilevah at an elevation around 1,450 m asl.

Below the scarp, rock fragments dislodged from the summit outcrop constitute talus deposits. Several gullies articulate the talus slope: debris are funneled down to constitute debris cone. Parallel, elongated ridges and lobes from accumulated materials witnesses present day debris flow activity at the foot of the upper slope, down to 1,150 m asl.

From here below extends the main body of the landslide whose triangular shape opens down like a fan in a southwest direction: from 100 m width at the tip, up to more than 800 m width at the landslide toe, down to 850 m asl, for a total length of almost 2 km.

Within the accumulation body, the dimensions of the rocky blocks range from decimetric to decametric, with a concentration of large blocks in marginal sectors of the accumulation or along particular directions. The composition of the larger blocks is predominantly limestone, occasionally marly limestone, corresponding to the brittle limestones of the Asmari unit.

The surface of the accumulation is marked by several elongated depression corresponding to drainage channels that articulate the deposit.

The toe of the landslide is incised by the stream in the valley floor, and the erosion scarps indicate that the landslide accumulation has filled the valley, partly ascending the opposite slope, before later being eroded by surface running waters.

⁶ Allen et al. 2013.



Figure 3.4 - Geomorphological setting of the Kal-e Chendar sacred landscape within the gigantic landslide detached from the Kuh-e Bilaba mountain (Image from Google Earth-Pro App, retrieved on 29/12/2023).

The left side of the accumulation is articulated by some scarps and longitudinal ridges, indicating the likely activation of secondary gravitational phenomena compared to the major landslide.

Chapter 4

Topography of Kal-e Chendar

Nicolò Masturzo

4.1 Previous investigations

Previous accounts of the research carried out by our expedition have emphasised the importance of Stein and Karimi's investigation in 1936 at Kal-e Chendar.¹ A small architectural complex was uncovered during Stein and Karimi's stay at the site, which lasted barely one week.² The excavation revealed a sort of rectangular peribolos, supposedly built on stone foundations, at least one baked brick platform or altar, some brick bases, and several stone pedestals for statues. Various fragments of bronze sculptures, found there some months earlier by the dwellers, date to the Hellenistic and Parthian periods.³ From the beginning, the findings were interpreted as the remains of a 'temple, measuring about 76 by 40 feet, which had been destroyed by fire and sacked'.⁴

After this initial research, no systematic study of the site was carried out until our archaeological investigation had begun.⁵ One of the starting points of our research was the attempt to identify the remains published by Stein, but the area of investigation was considerably extended to contextualise the old finds. In fact, it was found that the possible area of archaeological interest was indeed very large, reaching an area of at least 50 hectares on the western bank of the wide valley marked by the river Rud-e Shami.

The need to have the support of an accurate cartography of the area, updated and carried out for archaeological interpretation, led to the organisation of the first detailed topographic survey campaign. A network of stations to support the survey was set up in the field in 2014 by Cristina Bonfanti. Below is an extract from her technical report.

'Topography was conducted with the purpose of deriving large-scale cartography (1:2,000-1:500) of the Kal-e Chendar area: vertices have been located into a global reference system (UTM WGS 84 zone 39) for verifying the network stability and acquire precise measurements. This allowed us to obtain a geo-referenced Digital Terrestrial model (DTM) of the surveyed area, based on the ground morphology. The network, terrain's elevation, and ground control points (GCP) have been acquired both by GPS receivers and total station (TS). [...] A GPS and GLONASS receiver (Leica 500 system) was used for this purpose.'

In 2014, the elevation survey was carried out to the west of the road which roughly cuts the area of archaeological interest in a north-south direction (Area A). The density of the measurements was approximately one elevation point per 76.4 m². In addition, the various structures revealed by the archaeological investigations were measured in that year and in 2015. The density of the elevation points suggested to Bonfanti to use a method of calculating the contours by interpolation (Kriging method of interpolation). The Triangular Irregular Network (TIN) and Digital Elevation Model (DEM) were processed later. The processing of the field data made it possible to precisely define the variations

¹ See chapter 1 and, for instance: Mehr Kian, Messina 2019b, 271-273; Cellerino, Foiatta 2020, 55-56.

² Stein 1938, 325-326; Stein 1940, 141-158.

³ Stein 1938, 324-325, pl. 9-10; Stein 1940, 130-135. At least one statue is an idealized portrait in a typical Hellenistic style. The bronze fragments of the 'Hellenistic ruler', reassembled into a statue in heroic pose, have been dubitatively attributed to Antiochus IV (Rostovtzeff 1941, I, 66, tab. X), or finally to 'a king of the early Kamnaskirid dynasty and dated around 140 BC' (Lindström 2021, 184-186).

⁴ Stein 1938, 325.

⁵ On our joint research, see Messina, Mehr Kian 2014; Messina, Mehr Kian 2016; Messina, Mehr Kian 2019b; Baqherian et al. 2016; Bucci et al. 2017.

Table 1. Reference stations reported in 2014

Reference Station	East	North	Elevation
1 QAL	377101.966	3547823.921	1012.025
2 QAL	377540.783	3547944.428	957.666
3 QAL	377350.568	3547674.542	973.928
1000	377194.830	3547772.035	1002.670
2000	377150.065	3547895.127	1009.784

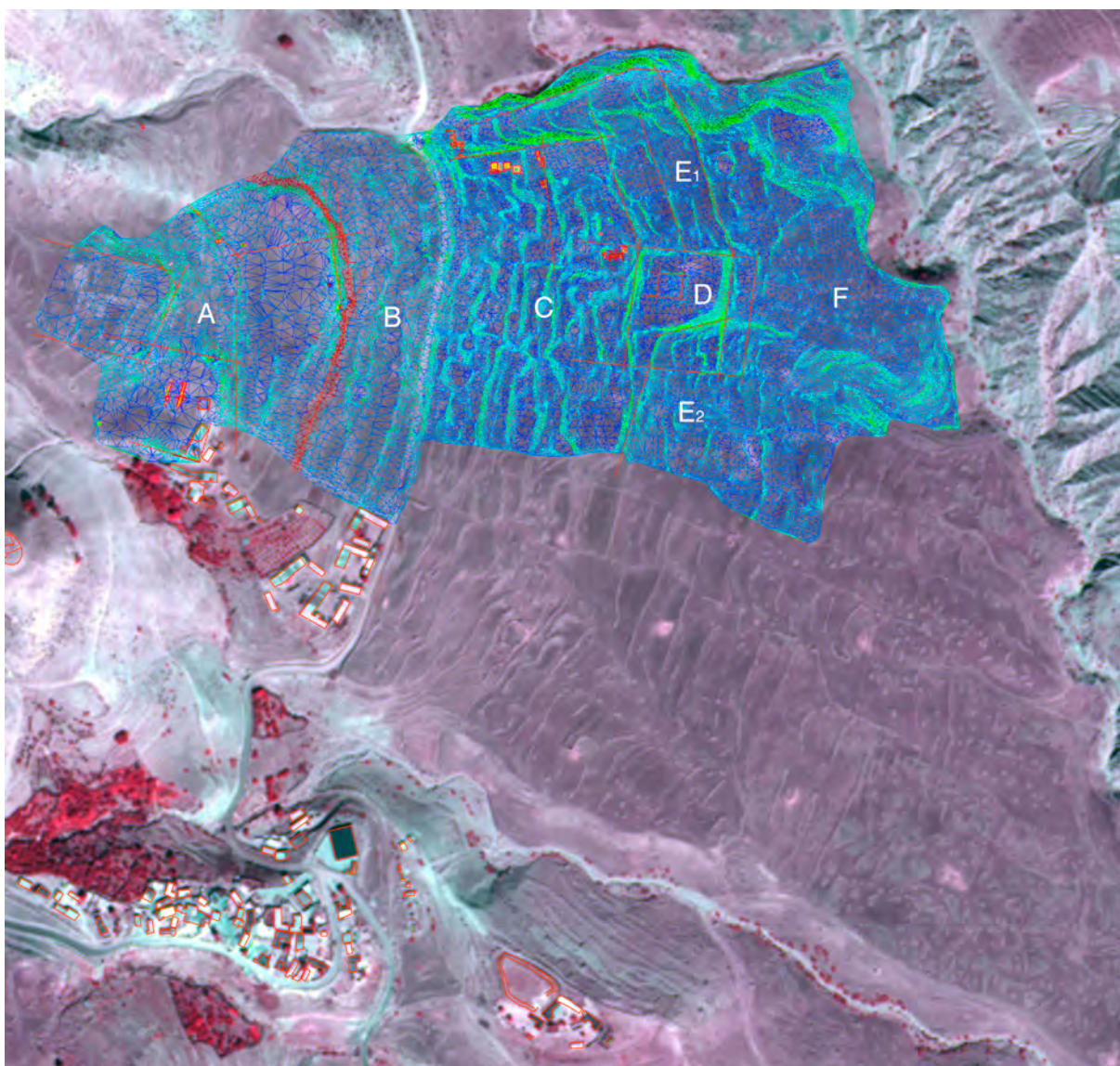


Figure 4.1 - The TIN (Triangulated Irregular Network) coloured by the slope of the terrain, over the false colours satellite image (NRG: Near infrared, Red, Green) of Kal-e Chendar

in the slope of the terrain, some of which were already visible on the surface survey. Three imposing terracing structures were highlighted in this area.⁶

Regarding the hypothetical interpretation of these terraces, it is known that Parthian sanctuaries are largely composed of imposing terraced structures that determine the paradigmatic forms of

⁶ Messina 2015, 198.

monumental spaces, as in the region we have the well-known cases of Majid-e Sulayman and Bard-e Neshandeh.⁷

4.2 Purposes of detection procedures

The morphology of the land surface appears to be determined by anthropogenic processes, among which those due to the current cultivation of the debris fan, which roughly characterises the area of greatest archaeological importance, are very evident. Although the current cultivation has a considerable impact on the morphology of the land, through mechanical harrowing and the creation of stone deposits at the edge of the small fertile plots, it does not seem to have completely altered the ancient layout of the area. In fact, even a cursory examination allows us to identify with certainty some structures formed by imposing terracing works, as can be clearly seen in Fig. 4.1. In addition to these large archaeostructures, it has been considered possible to define some morphological features of lesser importance by carrying out an appropriate detailed survey of the surface of the terrain.

It was therefore decided in advance to base the 2016 topographic survey on a procedure that would provide a detailed definition of the terrain surface, without recourse to interpolation methods. The measurement of the elevation points therefore followed the slope of the terrain as closely as possible, with a higher density of measurements at changes in slope. In this case, the visual assessment of the situation, including the micro-relief, is a fundamental element for the validity of the morphological analysis. Although they are not completely irrelevant in the theoretical definition of the land surface, the accumulations of stones generally found at the edge of the cultivated areas were excluded from the measurements. In fact, it was considered that they could be a sign of disturbance that could be eliminated from the outset, without prejudice to a detailed reading of the preserved ancient morphology.

4.3 Topographic Survey

It was not considered necessary to verify the network of reference stations established by Bonfanti in 2014, as the calculated data guaranteed their accuracy. However, for operational reasons, only the station called 2_QAL (Kal-e Chendar), which was optimally located in the area to be surveyed, was used. The stability of the reference station data was checked for each survey session.

A total area of 154,900 m² was surveyed with 7,758 points, i.e. a density of approximately one point per 20 m². The various field survey sessions were stored in a simple E, N, Q format (reference datum: UTM WGS system 84, Fuse 39 N) and transferred to CAD.

For this purpose, a GNSS system was used, with two Navcom Technology SF-3040 receivers synchronously connected in RTK (Real Time Kinematic) mode, capable of receiving GPS and GLONASS signals, SBAS corrections, with an accuracy (RMS) of 1cm + 0.5 ppm horizontal and 2 cm + 1 ppm vertical.

The rather limited time available for the surveying operations did not allow the measurement of the outcropping structures and elevation points to be extended to the entire area of interest. In fact, the survey work was carried out from 02/11/2016 to 13/11/2016, in ten different operational sessions. It was preferred to carry out an accurate analysis of a limited area, rather than a survey with much sparser sampling, which would inevitably have produced a generic terrain representation with a low level of definition of the whole area.

The density of the survey points allowed the immediate processing of the slope model according to the Triangulated Irregular Network (TIN, Delaunay triangulation method) and subsequently the drawing of contour lines at 0.5 m and 1.0 m equidistance. However, the model of the triangular mesh obtained from the automatic Delaunay triangulation method, does not always respond best to the

⁷ Messina 2015, 185-191.

irregularities of the measurements made in the field. The inconsistencies caused by the automatic surface processing (TIN) were therefore corrected by modifying the polylines of the contour lines in the CAD drawing, on the basis of correct interpolation between points. After this verification work, the final three-dimensional terrain model was produced.

In addition to the terrain survey, a number of ancient outcrop structures were identified. A sketch was made of these, indicating the points measured, and the drawing was then traced on CAD.

4.4 Morphological features of the terrain and ancient macrostructures

A simple slope analysis was carried out to highlight ancient terracing structures (Fig. 4.1). The maximum level of slope to be highlighted using a palette of 17 colours was set at 76.5 degrees, with each colour defining a slope interval of 4.5 degrees. The resulting mesh highlights a series of homogeneous areas.

Area A is well defined on the valley side by a long continuous escarpment, probably due to the presence of an ancient and imposing terracing wall. The irregular shape of the escarpment follows the course of the terrain between the northern and southern valleys that drain into the Rud-e Shami stream. There are at least three large esplanades in this area, which must have been terraces realised in sequence on the slope (Fig. 4.2). The Stein and Karimi Terrace is that of the ancient excavation. For a more detailed

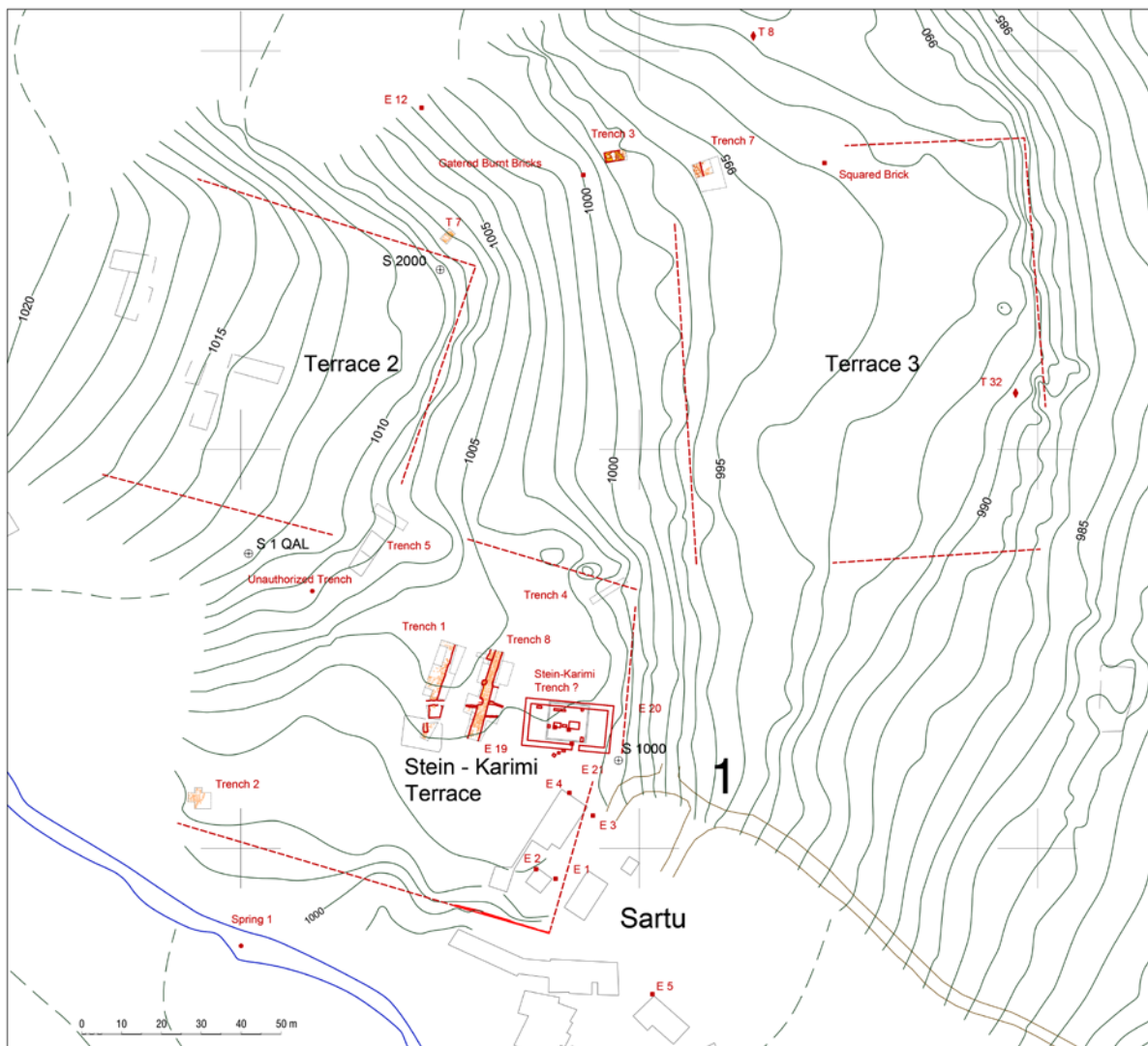


Figure 4.2 - Area A of the topographic survey. Contour lines at 1 m (survey C. Bonfanti, processing N. Masturzo).

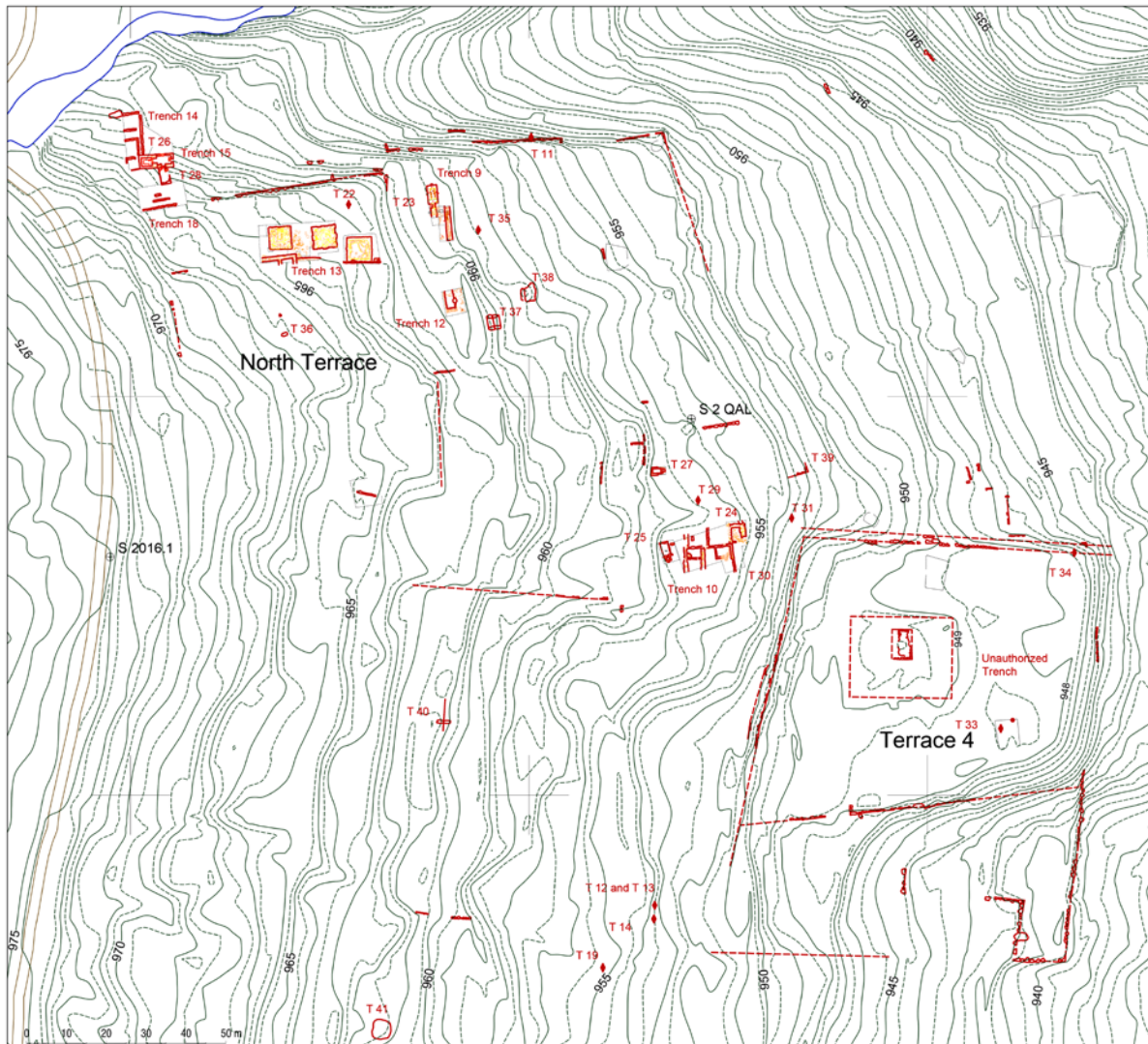


Figure 4.3 - Areas C-D of the topographic survey. Contour lines at 1 m, integrated with dashed contour lines at 0.5 m (survey and processing N. Masturzo)

description of the archaeological situation on the upper terraces, I refer to chapters 2 and 6.3 in this volume and to earlier reports.⁸

This monumental arrangement was identified at the beginning of our archaeological research and, also basing on the earlier findings, it corroborates the presence of a large religious complex.⁹ Here we find essentially the same articulation as at Bard-e Neshandeh, where the layout is clearly defined, formed by terraces of different sizes and only approximately rectangular in plan.¹⁰ At Bard-e Neshandeh, the ascent from the lowest to the highest terrace is marked by a series of roughly aligned flights of steps. At Kal-e Chendar, of course, it is not possible to identify the remains of the path to the upper terrace, although it is plausible that it followed the slope in an east-west direction at points where a possible break in the terracing structures is noted (Fig. 4.2: 1).

Area B extends under the imposing terracing wall to the modern road (Fig. 4.1). In this area the terraces follow the semicircular course of the fan with at least two different levels.

Area C consists of a dense sequence of long terraces with narrow dimensions to the slope (Figs. 4.1, 4.3). In some places the terraces appear to be more extensive, although this may be the result of

⁸ See the most recent reports: Mehr Kian, Messina 2019b, 275-282; Cellarino, Fietta 2020, 57-58.

⁹ Messina 2015, 198-199, fig. 11.

¹⁰ Salaris 2017, 139-142, fig. 3.

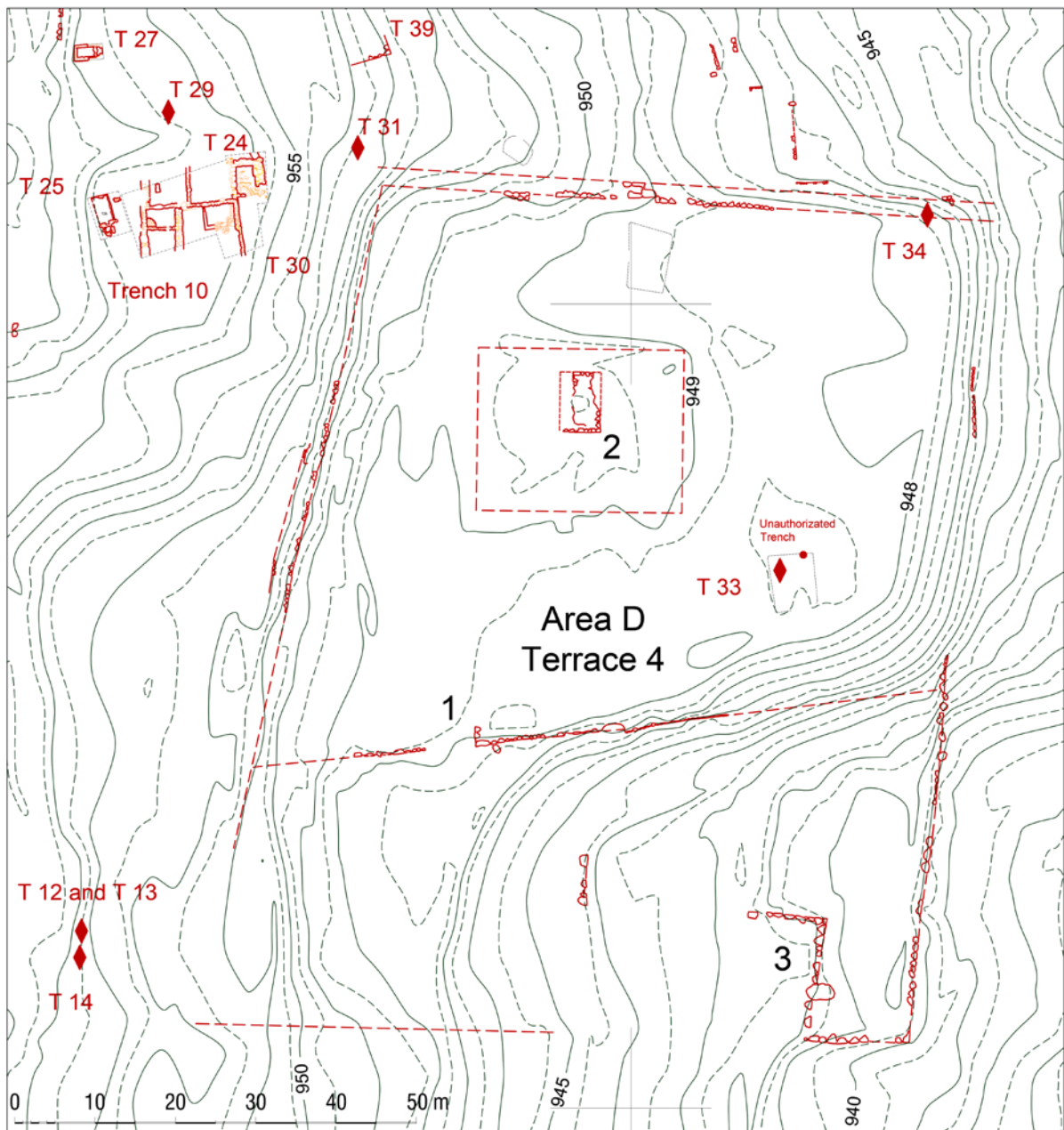


Figure 4.4 - Area D of the topographic survey. Contour lines at 1 m, integrated with dashed contour lines at 0.5 m (survey and processing N. Masturzo)

modern land subdivision. A number of ancient burials and monumental tombs have been found in this area, as well as a small dwelling complex, possibly of later date.¹¹

Of particular archaeological interest is the large trapezoidal platform on Terrace 4 (Area D), which is bounded on all four sides by high escarpments due to the collapse of retaining walls (Fig. 4.4). Only the upstream (western) retaining wall has some well-preserved sections of large irregular stone blocks, while the other three sides have only the cliffs.¹² It must be assumed that on these three sides only the base of the retaining wall has survived, since the higher part, as far as can be seen, is formed by the rubble behind it. On the southern and northern edges of the upper esplanade, however, the remains of two long walls made of large, roughly hewn blocks are clearly visible.

¹¹ See chapter 11.

¹² As in the phase II of Bard-e Neshandeh (2nd century BCE?); see Salaris 2017, 141-143.

The impressiveness of these structures can be explained by the existence of a large peribolos that enclosed the esplanade. In any case, the entrance to the peribolos area must have been in the western part of the esplanade, on the south or north side, where the difference in level with the outside was less. In fact, the remains of the southern block wall are interrupted by a corner structure that could have been the eastern side of the entrance (Fig. 4.4: 1).

Approximately in the middle of the esplanade of area D, there are the scarce remains of a square structure, which can be attributed to the monumental ancient layout (Fig. 4.4: 2). We should have here the remains of a kind of small podium: 7.56 m in the N-S direction and more than 4.90 m in the E-W direction. The elevation of the surrounding ground indicates the presence of a wider raised platform on which the podium was built. The examination of the outcropping structures does not allow us to assign a specific function to the identified remains, but the comparison with Bard-e Neshandeh again makes a religious function plausible.¹³

The functional arrangement of the ancient terracing may also have included an area to the south, at a much lower level, but bordered to the east by a structure that is well aligned with the eastern side of the Area D esplanade. In the south-eastern part of this area there are the remains of a rectangular structure made of large stones, which certainly dates from the pre-Islamic period (Fig. 4.4: 3). The dimensions of the exposed remains are approximately 8.2 m in the N-S direction and 10.0 m in the E-W direction, and there is clearly a massive filling of the perimeter, made of large non-square stone blocks. In this case, it could be a monumental tomb of the same type as those revealed by the investigations in the northern area of the site.¹⁴

Areas E1 and E2 appear to have a more homogeneous pattern between them and a greater extent of terracing (Fig. 4.1).

In area F, the overall terrain is less steep, and the terraced layout is less pronounced. At this stage of the research, it is not possible to say with certainty that this difference is due to a lower density of ancient structures, although it could be a plausible explanation.

Although the identification of the ancient terraces has mostly been based on indirect elements, i.e. the persistence of accentuated slopes, it is sufficiently evident that the actual pattern follows a certain regularity in some areas. Even if this pattern was designed in some way, it seems to largely reflect the need to adapt the main archaeological structures to the pre-existing ground conditions. This is particularly evident in the arcuate arrangement of the smaller terraces (areas B, C, E), although these have certainly undergone greater alteration and transformation over time because of agricultural use. The different areas of the surveyed site appear to have been arranged independently of each other.

An attempt has been made to identify the general dimensions that would have been adopted in the various ancient interventions for the organisation of the area, but it has not been possible to establish any concrete reference dimensions. In fact, although it is clear that the dimensions of the terraces are fairly homogeneous in each area, it is risky to try to assign a metrological reference to them. The exception seems to be the large platform, clearly artificial, Area D on Terrace 4 (Fig. 4.4), for which it is possible to at least hypothesise the general dimensions of the layout plan that presided over its construction. The northern and western sides could be expected to measure 160 cubits, and the eastern side around 110 cubits. A dimension of around 160 cubits also seems to be found in the layout of Area A: in the width of the lower terrace and the upper esplanade (Fig. 4.2).

An examination of the summary plan of the area published by Stein is very useful in trying to trace some of the main features of the site that may have survived to the present day (Fig. 1.3).¹⁵ Although it is not possible to make a metrically exact comparison, it appears that the southern tree-lined area

¹³ The dimensions of the structure at Kal-e Chendar are not very different from those of Bard-e Neshandeh, where in the Phase III the podium was transformed from square to rectangular: 10.45 m long, 6.85 m wide (Ghirsman 1976, 27).

¹⁴ See chapter 6.6.1.

¹⁵ Stein 1940, 142 plan 10.

'Stein 3' coincides with the present Site H2 and that the building 'Stein 2' roughly coincides with one of the houses of the westernmost group of houses, Site H3. There is also a good correspondence between the course of the 'Path to Iureh' and the tomb group 'Stein 6'¹⁶ with the present road and with the northern tombs in Area C.

The location where the remains of the 'Stein 1' sanctuary were found is also sufficiently reliable.¹⁷ It appears to be the ruins of a still preserved wall enclosure (Fig. 4.2), the size of which coincides with the trench of the same shape indicated as 'Trench dug by Naib'.¹⁸ The existence of a dynastic statue, plausibly dating from the 2nd century BCE, suggests that the process of monumentalisation of the site began in that century at the latest.

The topographic survey method has allowed a detailed definition of the terrain in the study area, and, thanks to the processing of the topographic data, the main unexcavated structures of archaeological interest have been successfully identified. If the survey has identified the main monumental complexes built at Kal-e Chendar, further investigations are awaited to better specify their general architectural layout or to suggest a more precise chronological sequence.¹⁹

¹⁶ Or 'below track which crosses the cultivable portion of the site below the ruined shrine and leads in a northerly direction towards the village of Iweh and the Karun, there are found a number of tombs' (Stein 1940, 157-158).

¹⁷ Stein 1940, 143-144.

¹⁸ Stein 1940, 145 plan 11.

¹⁹ See chapter 6.1 and Mehr Kian, Messina 2019b.

Chapter 5

The Landscape of Kal-e Chendar

Francesca Giusto¹

5.1 The natural environment

5.1.1. The regional scale

Kal-e Chendar is located in the valley of Shami, in a mountainous region of the Izeh country. The area is characterized by several mountain ranges and small plain areas (see chapter 3).

West of the archaeological site, anticline chains run parallel to each other forming long and narrow valleys, such as the valley of Deli, not far from the site (Fig. 5.1). They start from the Shahid-e 'Abbaspour dam (to the north-west) and end in correspondence of the plains of Piyun and Izeh (to the south-east). Into the valleys the terrain is flat or hilly, while the ridges that flank them raise abruptly taking the aspect of cliffs. East of the archaeological site the reliefs are mostly composed by monoclinical massifs, presenting a less steep terrain than the western ridges. Along the east limit of the studied area cliffs form deep gorges into which the river Karun flows. The mountain peaks are quite low, and the altitudes generally vary from about 1,000 to 1,500 m asl. Few exceptions in the area are represented by the Bilevah mountain, near the archeological site, and by the nearby Jala or Jalia mountain, having peaks of 1,709 and 1,759 m asl respectively. The mountains that flank the Izeh plain to the south and east are, instead, higher, reaching elevations included between 1,400 to 2,200 m asl.²

The flat areas in the region have a limited extension and are almost enclosed by surrounding reliefs (Fig. 5.1). South-east of the Shami valley there is the small plain of Piyun, which covers an area of about 25 km². At its south limit, a group of reliefs extends eastward and limits the access to the nearby plain of Izeh, here reduced to a narrow corridor about 500 m wide. To the south-east there is the plain of Izeh, about 124 km² wide and characterized by two seasonal lakes. To the north-east of the Izeh plain it opens the small plain of Susan, about 20 km² wide; it is separated from the Izeh plain by a mountain range and is crossed by the river Karun. The plains of Piyun and Izeh have an altitude of about 800 m asl, while the plain of Susan is about 550 m asl high.³

The river Karun, among the most important watercourses of southwest Iran, is the only perennial watercourse of the region (Fig. 5.2). It is located along the east, west and north limits of the area considered in this chapter; to the north-west the river is replaced by an artificial lake, the Shaid-e 'Abbaspour dam. The original course of the Karun is documented, nevertheless, on maps of the area produced before the dam construction, such as a geological map⁴ (scale 1:100,000) and a soviet topographic map⁵ (scale 1:200,000). There are several seasonal water sources; the largest of them is the Tashar, along the southwestern part of the area. The comparison between maps produced before

¹ The author wishes to thank Ms Mahshid Zeighami Moghaddam and Prof. Harir Sherkat (Dipartimento di Studi Umanistici, UniTo) for the help with the translation of the cartography from Persian. Moreover, the author wishes to thank: Prof. Marco Giardino (Dipartimento di Scienze della Terra, UniTo), Prof. Giorgio Carnevale (Dipartimento di Scienze della Terra, UniTo), Prof. Giampiero Lombardi (Dipartimento di Scienze Agrarie, Forestali e Alimentari, UniTo), the late Prof. Simona Fratianni (Dipartimento di Scienze della Vita e Biologia dei Sistemi, UniTo) and Dr. Enrico Foietta (Dipartimento di Studi Storici, UniTo) for their kind help and advices during the research.

² Iranian topographic maps elaborated by the National Geographic Organization (NGO): sheet 5954III Keveshk (2002), sheet 5954II Tarashok (2002), sheet 5953IV Chamreyhān (1999) and sheet 5953I Izeh (1999), scale 1:50,000 (©NGO, Army of the Islamic Republic of Iran). In addition, for the mountain elevations a DSM with a 30 m resolution (DSM ALOS WORLD 3D ©JAXA) has been used.

³ Iranian topographic maps elaborated by the National Geographic Organization (NGO): sheet 5954III Keveshk (2002), sheet 5954II Tarashok (2002), sheet 5953IV Chamreyhān (1999) and sheet 5953I Izeh (1999), scale 1:50,000 (©NGO, Army of the Islamic Republic of Iran).

⁴ Geological map, sheet 20821E Kuh-e Kamestan (1967) (©Iranian Oil Operating Companies).

⁵ Soviet topographic map produced by the General Staff of the Soviet Army (VTU), maps series SK 42, scale 1:200,000, sheet I-39-XXXVI (1972) (code name: Д-80-IX 72-Н) (©General Staff of the Soviet Army) (source: mapstore.com).

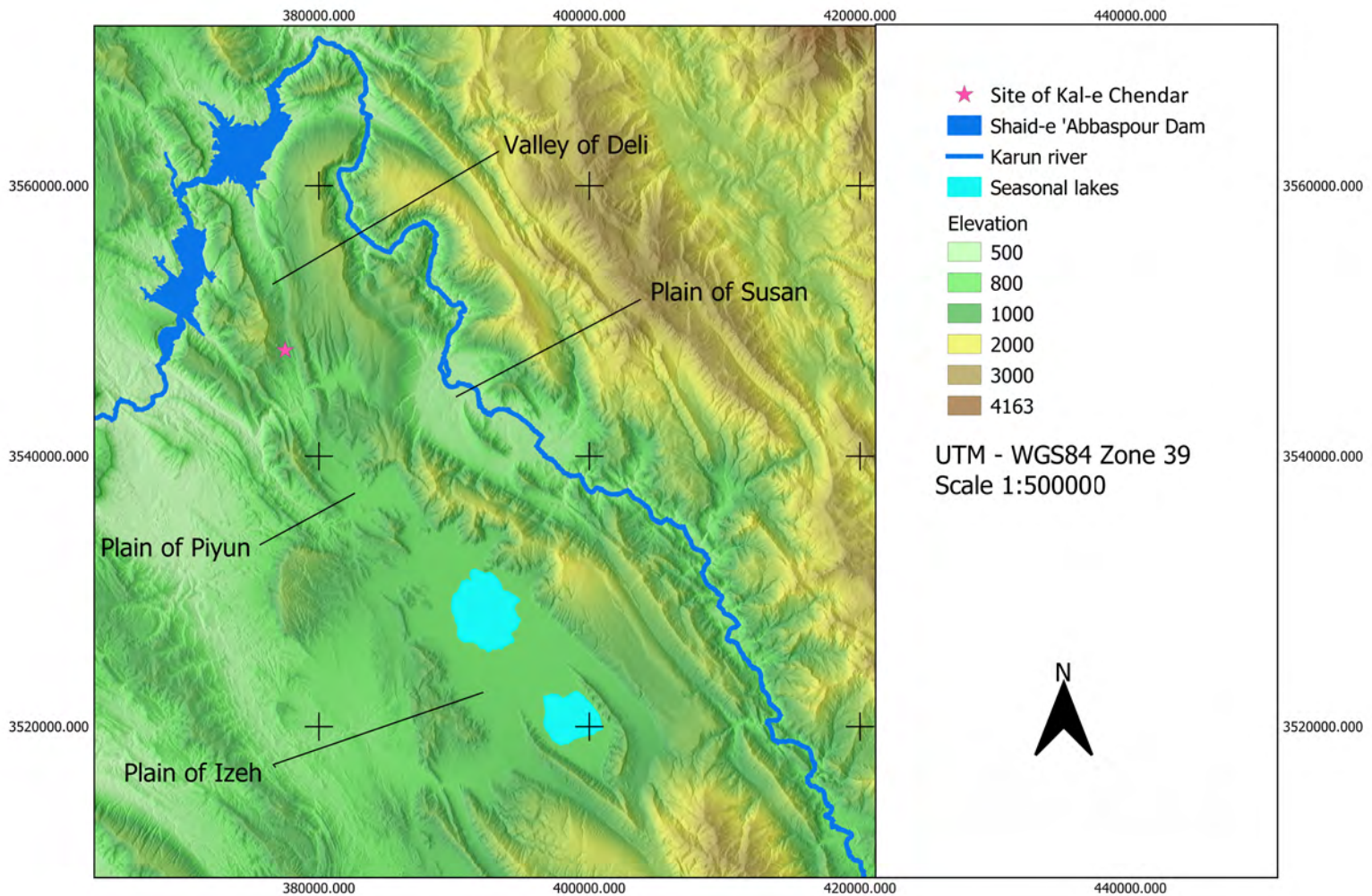


Figure 5.1 - The Shami area: physical geography. Hillshade model from DSM ALOS WORLD 3D, 30 m resolution (©JAXA); data from Topographic maps of Iran (sheet 5954III Keveshk, 2002, sheet 5954II Tarashok, 2002, sheet 5953IV Chamreyhān, 1999, sheet 5953I Īzeh, 1999 ©NGO, Army of the Islamic Republic of Iran) (elaboration by the autor)

the dam construction⁶ and a more recent Iranian topographic map⁷ (scale 1:50,000) shows how the dam has influenced the hydrology of the area: an example is given by some watercourses that now have a seasonal regime but were characterized before the dam construction by a permanent water flow. In the plain of Izeh there are two seasonal lakes, the Shat-e Bandan, to the southeast, and the Shat-e Menqar or Miangharan or Shat-e Izeh, to the north-west; even if there are not proxy data documenting the extension of the lakes during the Hellenistic and Parthian periods, it seems plausible that at their maximum they didn't reach the actual width, as several ancient settlements are situated on the actual shore of the lakes. The seasonal springs are numerous and are concentrated in the plains of Piyun and Izeh. The region is poor in permanent springs: however, an exception is represented by the Shami valley, where, at the foot of the Mal Boland Mountain (i.e. just south of the archaeological site), there are several perennial springs.⁸

⁶ Geological map, sheet 20821E Kuh-e Kamestan (1967), scale 1:100,000 (©Iranian Oil Operating Companies); Soviet topographic map produced by the General Staff of the Soviet Army (VTU), maps series SK 42, scale 1:200,000, sheet I-39-XXXVI (1972) (code name: Д-80-IX 72-H) (©General Staff of the Soviet Army) (source: mapstore.com).

⁷ Iranian topographic maps elaborated by the National Geographic Organization (NGO): sheet 5954III Keveshk (2002), (©NGO, Army of the Islamic Republic of Iran).

⁸ Iranian topographic maps elaborated by the National Geographic Organization (NGO): sheet 5954III Keveshk (2002), sheet 5954II Tarashok (2002), sheet 5953IV Chamreyhān (1999) and sheet 5953I Izeh (1999), scale 1:50,000 (©NGO, Army of the Islamic Republic of Iran).

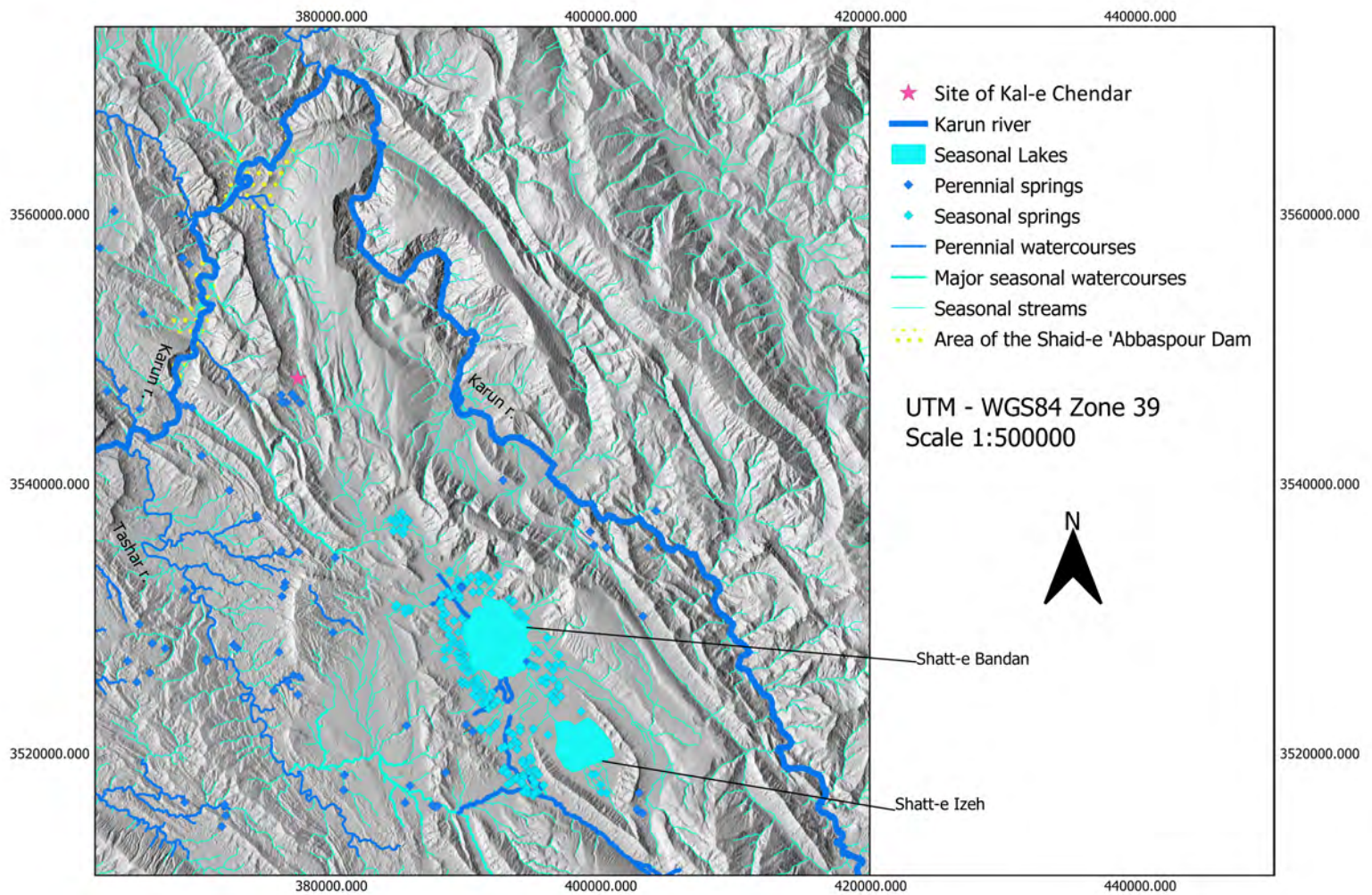


Figure 5.2 - The Shami area: hydrology. Hillshade model from DSM ALOS WORLD 3D, 30 m resolution (©JAXA); data from: Topographic maps of Iran (sheet 5954III Keveshk, 2002, sheet 5954II Tarashok, 2002, sheet 5953IV Chamreyhān, 1999, sheet 5953I Īzeh, 1999 ©NGO, Army of the Islamic Republic of Iran), Topographic maps (maps series SK 42, sheet I-39-XXXVI, 1972, code name Д-80-IX 72-Н ©General Staff of the Soviet Army) (source: mapstore.com), Geological maps of Iran (sheet 20821E Kuh-e Kamestan, 1967 ©Iranian Oil Operating Companies) (elaboration by the author)

According to a recent classification based on the Global Bioclimatic Classification System, which jointly considers vegetation and climate, the study area has a bio-climate defined as ‘Tropical Xeric’.⁹ In general, the area of the Zagros chain is characterized by a strong range of temperature between winter and summer months¹⁰ with precipitations concentrated in cold months, i.e. in winter and spring, according to a Mediterranean-type regime.¹¹ In the Izeh area, about 30 km from Kal-e Chendar as the crow flies, the climate is characterized by hot and dry summers, during which temperatures can reach up to 42° C, and by relatively cold winters, in which the temperature has a maximum of -4° C.¹² The mean annual temperature is 20.7° C; in July the mean daily temperature is 33° C and in February 5.9° C.¹³ The mean annual amount of precipitation is 660 mm, allowing dry-farming agriculture.¹⁴

⁹ Djamali et al. 2011, tab. 4, figs 1-2.

¹⁰ Ganji 1968, 228, 231-232, figs 76 (no. III), 78.

¹¹ Khalili, Rahimi 2014, 218, fig. 7, tab. 8. This rainfall regime refers to the weather station of Shahr-e Kord.

¹² Kalantari et al. 2009, 26.

¹³ Nasserli et al. 2009, 101. For the record of the mean annual temperature from the weather station of Izeh see also: Djamali et al. 2011, tab. 4; Aleemahmoodi et al. 2014, 17.

¹⁴ Kalantari et al. 2009, 26; Nasserli et al. 2009, 101; Niknami, Jayez 2012, 13.

The Zagros chain is characterized by the so-called “Semi-humid Zagrosian Oak forest”.¹⁵ It is a deciduous forest resistant to cold and aridity, with xerophyte species. The trees are of short height and are scattered distant from each other; the space between them is covered by an herbaceous steppe.¹⁶ The area covered by the Zagrosian forest belongs to the Iranian-Turanian floristic complex, with some elements of the Mediterranean and the Saharan-Arabian flora. The main tree and shrub species are the oak (*Quercus brantii*, *Quercus libanii* and *Quercus boissieri*), the maple (*Acer monspessulanum* subs. *Cinerascens*), the pear (*Pyrus syriaca*), the pistachio (*Pistacia khinjuk* and *Pistacia atlantica*), the almond (*Amygdalus arabica*, *Amygdalus scoparia* and *Amygdalus elaeagnifolia*), the cherry (*Cerasus microcarpa*), the juniper (*Juniper excelsa*), the cypress (*Cupressus sempervirens* var. *horizontalis*), the hawthorn (*Craetagus* sp., in particular *C. azarolus* and *C. monogyna*) and the honeysuckle (*Lonicera nummulariaefolia*). The poplar (*Populus euphratica*), the willow (*Salix* gen.), the alder (*Alnus* gen.), the ash (*Fraxinus rotundifolia* subs. *Persica*), the plane (*Platanus orientalis*) and vines grow in the valleys.¹⁷ The rather sparse herbaceous flora consists mostly of annual species, such as those of the genus *Aegilops* or goat grass and inedible or spiny plants, such as those belonging to the genus *Astragalus*, *Acantholimon* and *Acanthophyllum*; there are few leguminous plants suitable for grazing. The prolonged exploitation over time of the pastures for grazing, in fact, caused a depletion of the soil, leading to the replacement of perennial forage species with low nutritional value plants and increasing the erosion of the mountain slopes. Above 1,500 m asl, however, perennial herbaceous plants are more widespread.¹⁸ Deforestation caused by the need for wood and cultivation has also greatly reduced the original extension and the floristic variety of the Zagrosian forest.¹⁹

The so-called ‘Pistachio-Almond Steppe’ develops on the lower mountain slopes and on the hilly areas of the Zagros, at altitudes between 200 and 700 m asl.²⁰ The limit with the Zagrosian forest is difficult to distinguish, as *Quercus brantii* still grows in some parts. This class of vegetation is configured as a maquis, formed mainly of shrub and herbaceous species, while trees are rarer and more scattered. The flora generally belongs to the Iranian-Turanian complex. Typical species include the almond (*Amygdalus scoparia*), the pistachio (*Pistacia khinjuk* and *Pistacia atlantica*), the maple (*Acer monspessulanum* subs. *Cinerascens* and *Acer monspessulanum* subs. *Persicum*), the cherry (*Cerasus microcarpa*); to these can be added, although are less common, the fig (*Ficus carica*) and the juniper (*Juniper excelsa*). The actual herbaceous flora is characterized by the wide diffusion of thorny or inedible plants (such as *Astragalus glaucanthus*, *Astragalus phylloketrus* and *Astragalus squarrosus*) developed as a consequence of the repeated use of the land for grazing.²¹

Specifically, the mountains around the Izeh plain are covered between 900 and 2,200 m asl by a sparse forest of oaks and junipers mixed with a steppe-like cover (Fig. 5.3), while the plains are classified as semi-steppe (Fig. 5.4). Besides the oak and the juniper, the most common tree species are the fig, the Christ’s thorn jujube (*Ziziphus spina-christi*) and the pistachio. Among the most widespread herbaceous species there is the astragalus.²² Above 1,800 m asl, trees decrease significantly in favor of

¹⁵ Bobek 1968, 285, fig. 88. Other definitions have been proposed for the classification of the Zagros vegetation: ‘Zagrosian xerophilous deciduous oak forest’ or ‘Kurdo-Zagrosian oak steppe-forest belt’ (Zohari 1963, 106), ‘Xerophilous forest flora’ (Pabot 1964, 38-39) and ‘Cold deciduous broad-leaved mountain woodland’ (van Zeist, Bottema 1991, 23, 28-29, no. 4, fig. 4). On the vegetation of the Zagros see also: Ehlers 2012, 2; Balatti 2017, 305-308; Petrie et al. 2018, 105-107; Farzaneh, Rastaghi 2018, 62.

¹⁶ Zohari 1963, 38; Bobek 1968, 285; van Zeist, Bottema 1977, 24, 26, fig. 2; van Zeist 2008a, 26.

¹⁷ Bobek 1968, 286; Pabot 1964, 38-39; van Zeist, Bottema 1977, 24, 26; 1991, 29; Frey, Probst 1986, 20-21; Frey et al. 1999, 2-3, 9-10. For a list of the plants of the Zagrosian forest see also: Zohari 1963, 38, 41, 93-94; Ehlers 2012, 2; Farzaneh, Rastaghi 2018, tabs. 5.8-5.9.

¹⁸ Pabot 1964, 39; van Zeist, Bottema 1977, 26; Elhaesahar, Masoudi 2018.

¹⁹ Zohari 1963, 14-16; Dewan, Famouri 1964, 49-50; Bobek 1968, 281-282, 292-293; Frey, Probst 1986, 21, 31-32; Frey et al. 1999, 12, 15-16; Ehlers 2012, 3-4; Farshad et al. 2018, 215. On the deforestation of the Zagros in antiquity see: de Planhol 1969; Potts 2016, 26-27; Balatti 2017, 318-323.

²⁰ Bobek 1968, fig. 88; van Zeist, Bottema 1977, 26. Other definition are: ‘substeppe zone’ (Pabot 1964, 36, 38), ‘*Amygdalus* or *pistacia*-*amygdalus* steppe-forest’ (Zohari 1963) and ‘Open tree and shrub vegetation’ or ‘Cold deciduous open xeromorphic scrub’ (van Zeist, Bottema 1991, 23, 30, no. 6, fig. 4).

²¹ Zohary 1963, 94, 106; Pabot 1964, 36, 38; Bobek 1968, 389; van Zeist, Bottema 1977, 24; Frey, Probst 1986, 22-23; van Zeist, Bottema 1991, 30; Frey et al. 1999, 10-12; van Zeist 2008a, 25-27.

²² Among the other herbaceous plants there are the bellflower (*campanula cecilii*), the milk thistle (*silybum marianum*), the globe thistles (*echinops dichrous*), the morning glory (*convolvulus arvensis*), the dock (*rumex vesicarius*), the henbane (*hyoscyamus tenuicaulis*), the nettle (*urtica pilulifera*), the chamomile (*matricaria recutita* or *matricaria chamomilla*) as well as *pimpinella eriocarpa*, *ixiolirion tataricum*, *aristolochia batlae*, *cionura erecta*, *periploca aphylla*, *anchusa strigosa*, *helianthemum silicifolium*, *anthemis susiana*, *carthamus oxyacanth* and *gundelia tournefortii* (Niknami, Jayez 2012, 14-15).

herbaceous vegetation, such as the astragalus and the artemisia. Many of the plants in upper mountain areas are edible and the grasslands are extensively used as pastures.²³

The biggest part of the region, and in particular the mountain areas, is characterized by a calcaric regosol (FAO soil classification) (Fig. 5.5). It is a stony shallow soil, and often presents rock outcrops. The areas covered by calcaric regosol have a low economic potential: they allow only a moderate exploitation as pastureland through seasonally occupation.²⁴ The plains of Piyun and Izeh, on the other hand, are characterized by both a haplic calcisol and a calcaric cambisol (FAO soil classification). These soils present a medium-high depth, a coarse texture and an accumulation of calcareous material. The areas described by these groups of soils have a high potential for agricultural exploitation through irrigation.²⁵ Most of the reliefs which border the plain of Izeh on its western side present soils classified as 'lithic leptosol' and 'calcaric regosol' (FAO soil classification). These are little or medium deep soils containing large quantities of lithic clasts. The area has a low potential for exploitation in relation to pastoralism, and large zones could remain unused due to the sterile soil.²⁶ Finally, the mountains that raise to the north-east and east of the Izeh plain show the predominance of a 'lithic leptosol' (FAO soil classification). Here the soil development is either totally absent or highly limited; where the



Figure 5.3 - Vegetation on the Bilevah peak, near Shami (photo by J. Mehr Kian)

²³ Niknami, Jayez 2012, 8-9, 13-15.

²⁴ Map elaborated by the Iranian Soil and Water Research Institute, sheet Khūzestān (1991), scale 1:250,000 (©Soil and Water Research Institute of Iran), soil no. 1.5. For the definition of 'calcaric regosol' in the FAO international classification: FAO-Unesco 1997, 45. The 'calcaric regosol' characterizes also the mountains around the plain of Izeh: Map elaborated by the Iranian Soil and Water Research Institute, sheet Khūzestān (1991), scale 1:250,000 (©Soil and Water Research Institute of Iran), soil nos 2.2, 3.1, 8.1, C.1.

²⁵ Map elaborated by the Iranian Soil and Water Research Institute, sheet Khūzestān (1991), scale 1:250,000 (©Soil and Water Research Institute of Iran), soil no. 4.1. For the definition of 'haplic calcisol' and 'calcaric cambisol' in the FAO international classification: FAO-Unesco 1997, 48-50.

²⁶ Map elaborated by the Iranian Soil and Water Research Institute, sheet Khūzestān (1991), scale 1:250,000 (©Soil and Water Research Institute of Iran), soil nos 1.2, 1.3. For the definition of 'lithic leptosol' in the FAO international classification: FAO-Unesco 1997, 45-46.



Figure 5.4 - The plain of Izeh and one of the seasonal lakes from Qal'eh-ye Kazhdoum (photo by V. Messina)

soil is present, it is rich in lithic clasts. As most of the area is barren and sterile, it has no exploitation potential.²⁷

As for the present land use, the plains of Piyun, Izeh and Susan are currently extensively exploited for agriculture. The valleys and some of the mountain slopes are cultivated through dry-farming and agricultural terraces, in particular on the north-eastern side of the area, where reliefs are less steep, as well as in the valleys of Deli and Shami. In the valley of Shami, moreover, a rather exceptional number of orchards is registered. The Susan plain, particularly fertile, is nowadays covered by paddy fields. The mountain slopes are extensively use as pastureland, mostly following a seasonal regime.²⁸

No environmental data are available for the area of Shami during the Hellenistic and Parthian periods: while ancient authors give only very general information on the natural landscape of Elymais,²⁹ proxy data from other areas of the central Zagros allow to reconstruct the paleo-environment on a regional level. The Mirabad Lake is located in the province of Luristan and is about 260 km far from Shami as the crow flies.³⁰ Taking into account a regional scale, the data from this site could be used also for the Shami area in order to understand if there were relevant differences from the modern period. Indeed, among the lake basins in western Iran which have been studied for the reconstruction of the paleoenvironment, Lake Mirabad is the closest one to Shami;³¹ moreover, the two areas seem to share a similar environment from the point of view of the topography, the modern climate and the vegetation.³²

²⁷ Map elaborated by the Iranian Soil and Water Research Institute, sheet Khūzestān (1991), scale 1:250,000 (©Soil and Water Research Institute of Iran), soil no. 1.1.

²⁸ Soil map elaborated by the Iranian Soil and Water Research Institute, sheet Khūzestān (1991), scale 1:250,000 (©Soil and Water Research Institute of Iran); Iranian topographic maps elaborated by the National Geographic Organization (NGO): sheet 5954III Keveshk (2002), sheet 5954II Tarashok (2002), sheet 5953IV Chamreyhān (1999) and sheet 5953I Izeh (1999), scale 1:50,000 (©NGO, Army of the Islamic Republic of Iran).

²⁹ Briant 1982, 64-66; Balatti 2017, 209-210, 324-326.

³⁰ van Zeist 1967, 304; van Zeist, Bottema, 1977, 31; Griffiths et al. 2001, 758; Stevens et al. 2006, 494-495. The coordinates of the lake are: 33°05'13.62"N, 47°42'70.01"E (WGS 84) o 5310154.930 E, 3906887.030 N (WGS 84 UTM zone 39N).

³¹ For a synthesis of the paleoenvironmental studies in western Iran see: Kehl 2009; Jones 2013; Jones et al. 2013; Petrie et al. 2018, 103-107 with bibliography.

³² It has been recognized by scholars the possibility to use pollen data for the reconstruction of ancient climate and vegetation in different areas taking into account modern regional climate differences (van Zeist, Bottema 1991, 16). The two sites are located in the same climatic zone as far as current climate studies are concerned and have similar characteristics in relation to rainfall and temperatures (Ganji 1968, figs 76, 77, 79; Alijani, Harman 1985, fig. 5). The mean annual rainfall in the area of Lake Mirabad is 500-600 mm, while the mean temperature for the months of January and July is 7° and 32°C respectively (van Zeist, Bottema 1977, 31). Furthermore, the two sites are situated in the

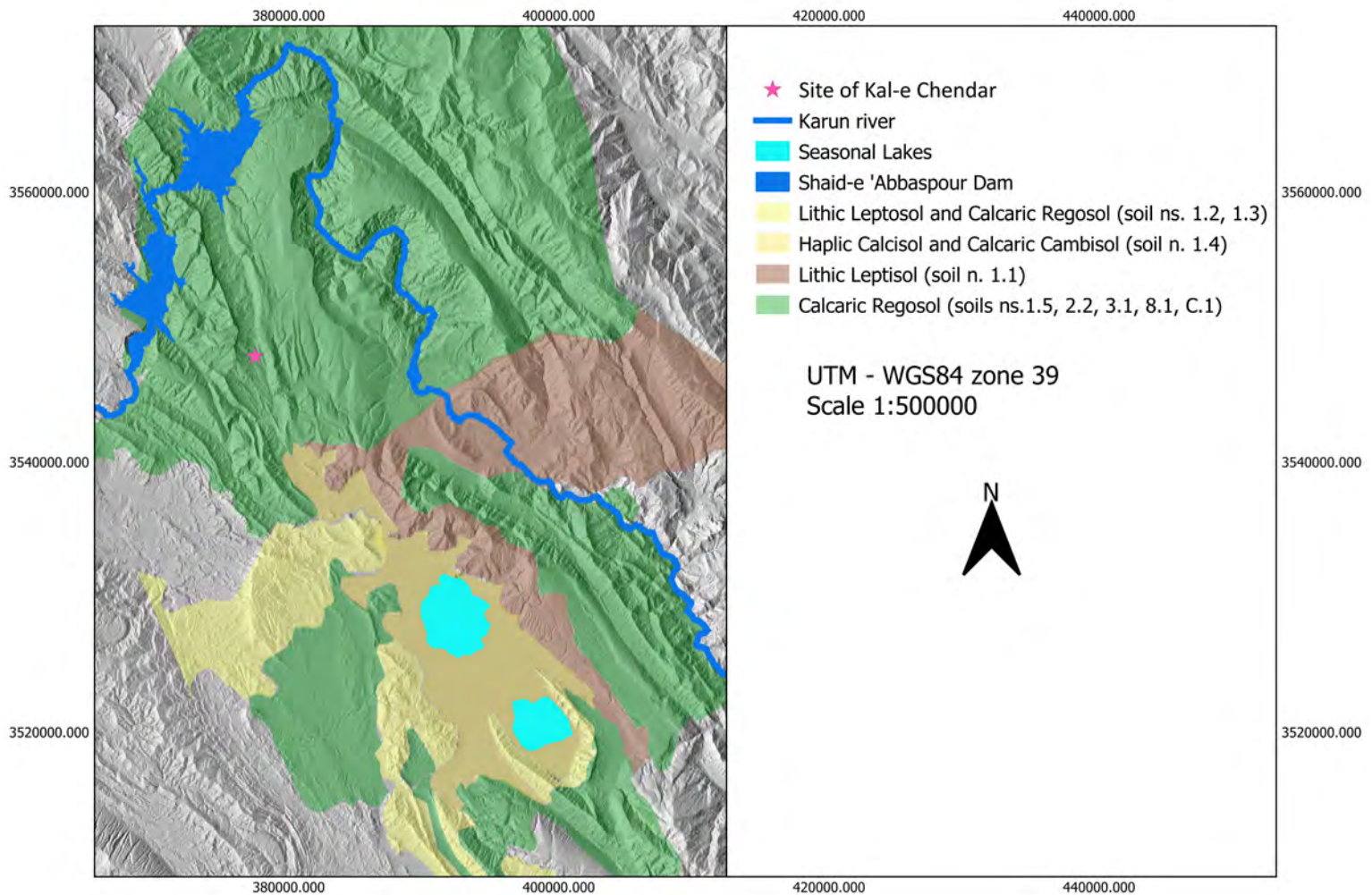


Figure 5.5 - Simplified map of the types of soils in the Shami area. Hillshade model from DSM ALOS WORLD 3D, 30 m resolution (©JAXA); data from Soil maps of Iran, sheet Khūzestān (1991), scale 1:250.000 (©Soil and Water Research Institute of Iran) (elaboration by the author)

Generally speaking, the modern climate regime in the region was established at the beginning of the late Holocene. Between 4,200 and 3,300 calibrated years BP, there is a decrease in the values of $\delta^{18}\text{O}$; this data can be interpreted alternatively as an increase in the amount of rainfall compared to the middle Holocene or as a transition from a continental to a Mediterranean precipitation regime. Two peaks in the increase in the oxygen isotope are recorded around 1,500 calibrated years BP and again around 500 calibrated years BP, presumably indicating two phases of major aridity. Starting from 400 years calibrated BP the oxygen isotope values drop quickly and remain low until the end of the record.³³

As regards the vegetation, during the early Holocene the area was characterized by an open pistachio forest and herbaceous species typical of arid climates (such as *Atriplex* and *Artemisia* gen.). Around 6,300 years calibrated BP, at the beginning of the middle Holocene, the rate of plants of *Quercus* genus seems to double in the pollen record, while species of the genus *Atriplex* and other *Chenopodiaceae* disappear. The development of a thin forest starts from 6,000–5,500 years calibrated BP and leads to

same bio-climatic area, that is the one called 'tropical xeric' (Djamali et al. 2011, fig. 2). Like Shami, the Mirabad Lake is located in the area of the 'Zagros oak forest' (Bobek 1968, fig. 88; Zohari 1963, 106; van Zeist, Bottema 1977, fig. 2.) in a mountain area characterized by quite low elevations (about 800 m asl) (van Zeist 1967, 304; van Zeist, Bottema 1977, 31; Griffiths et al. 2001, 758; Stevens et al. 2006, 494).

³³ Griffiths et al. 2001; Stevens et al. 2006.

the modern vegetation of the area characterized as ‘Zagrosian oak forest’. This plant cover is fully developed during the beginning of the late Holocene, approximately at 4,300 years calibrated BP.³⁴

5.1.2. The local scale

The small valley of Shami is located between the Piyun plain and the much longer synclinal valley of Deli (Fig. 5.6).³⁵ The valley, having a triangular shape, is about 15 km² wide and lies at an altitude varying from 900 to 1,100 m asl. The valley is delimited to the west by the mountain of Bilevah, which overlooks the archaeological site; its peak reaches an altitude of 1,709 m asl, representing one of the highest mountains of the area. To the south-west there are the reliefs of Mal Boland, whose maximum elevations vary from about 1,100 to 1,370 m asl. The eastern limit of the valley is formed by the Sisambouli chain, whose maximum elevations oscillate between 1,100 and 1,280 m asl. To the south-west, the valley is crossed by a range of low reliefs (about 800-900 m asl), following the same direction of the Mal Boland reliefs. To the north, between these reliefs and the area of the archaeological site, there is a hilly area, where mostly of the modern villages are located; the irregularity of the terrain is probably to relate to a landslide from the Bilevah mountain occurred before the Holocene.³⁶ To the east, between the Rud-e Shami and the Sisambouli hills there is a further low saddle of limestone hills (about 900-1,000 m asl), which extends parallel to the river. At the southern and northern end of the valley the mountain ranges extend to the west, creating two narrow natural passages through which it is possible to access the valley.

The archaeological site is located on a colluvial debris fan along the eastern side of the Bilevah mountain, at an altitude ranging from c. 920 to 1,040 m asl. The mountainside is characterized by a slope that increases in steepness: the elevations of the terrain vary from around 900 m asl near the Rud-e Shami, to 980 m asl at the height of the modern road up to about 1,100 m asl at the beginning of the colluvial slope, since where the mountain slope of the Bilevah take the aspect of cliffs (Fig. 5.7).

At the bottom a seasonal watercourse, the Rud-e Shami, flows along the eastern side of the valley (Fig. 5.6). Other seasonal streams flow down the mountainsides surrounding the valley into the Rud-e Shami. In particular, two seasonal streams flowing from the Bilevah peak with a W-E direction delimitate the area of the archaeological site (these have been conventionally called north and south streams). Moreover, near the Upper-Terrace there is a spring, Cheshmeh-ye Sar-e Murd; it has been regularized by the laying of rough stones and is currently dry.³⁷ It probably must have been still active at the time of Stein’s visit, as the British-Hungarian archaeologist mentions a spring and an orchard of pomegranates near the site.³⁸ The additional presence of four springs north of the site and of two just to the south, in the Saleh Vand area, were registered during the survey of our expedition. In the southern portion of the valley, moreover, there are some perennial springs, as indicated by the Iranian topographic map (Fig. 5.8); their presence is significant, since –except for the plains of Piyun and Izeh– only seasonal springs appear occasionally in the region (Fig. 5.2).

A modern road having a N-S direction passes through the valley, connecting the plain of Izeh with the river Karun. On the hilly part of the valley, to the west, there are few modern villages: Kal-e Chendar, near the archaeological site, Mal Boland, Darreh-ye Lap and Anje (Fig. 5.8).

³⁴ van Zeist 1967, 305, 308, 310-311; van Zeist, Bottema 1977, 59-60, 76-77, 81; 1991, 57; Griffiths et al. 2001, 761; Stevens et al. 2006, 496; van Zeist 2008b, 97-98, tab. 8.5. On pollen analysis from Lake Mirabad see also: el-Moslimany 1982, 345-346.

³⁵ The description of the valley of Shami refer to the following sources: Iranian topographic map elaborated by the National Geographic Organization (NGO), sheet 5954III Keveshk (2002), scale 1:50,000 (©NGO, Army of the Islamic Republic of Iran); high-resolution satellite image GeoEye, acquired the 2010-09-23 (©Digital Globe); Google Earth (©Google, ©CNES/Airbus). In addition, for slope and elevations a DSM with a 30 m resolution (DSM ALOS WORLD 3D ©JAXA) has been used. For the description of the Shami valley see also: Stein 1938, 325; 1940, 141, 143, fig. 10; Godard 1962, 175-180; Messina, Mehr Kian 2014, 67, 69, figs 3, 5, 9; Messina 2015, 198, figs 8, 11; Baqherian et al. 2016, 71, figs 4-5; Messina, Mehr Kian 2016, 441, 443, figs 2, 6; Bucci et al. 2017, 9, fig. 1; 2018, 59, fig. 1; Messina, Mehr Kian 2018, 299, fig. 4; 2019b, 275, fig. 4; Cellerino, Foietta 2020, 56, fig. 1.

³⁶ Geological map, sheet 20821E Kuh-e Kamestan (1967), scale 1:100,000 (©Iranian Oil Operating Companies). Concerning the geology of the area see chapter 3.

³⁷ Messina, Mehr Kian 2014, 69, figs 5, 9; 2016, 443.

³⁸ Stein 1940, 143, fig. 10.

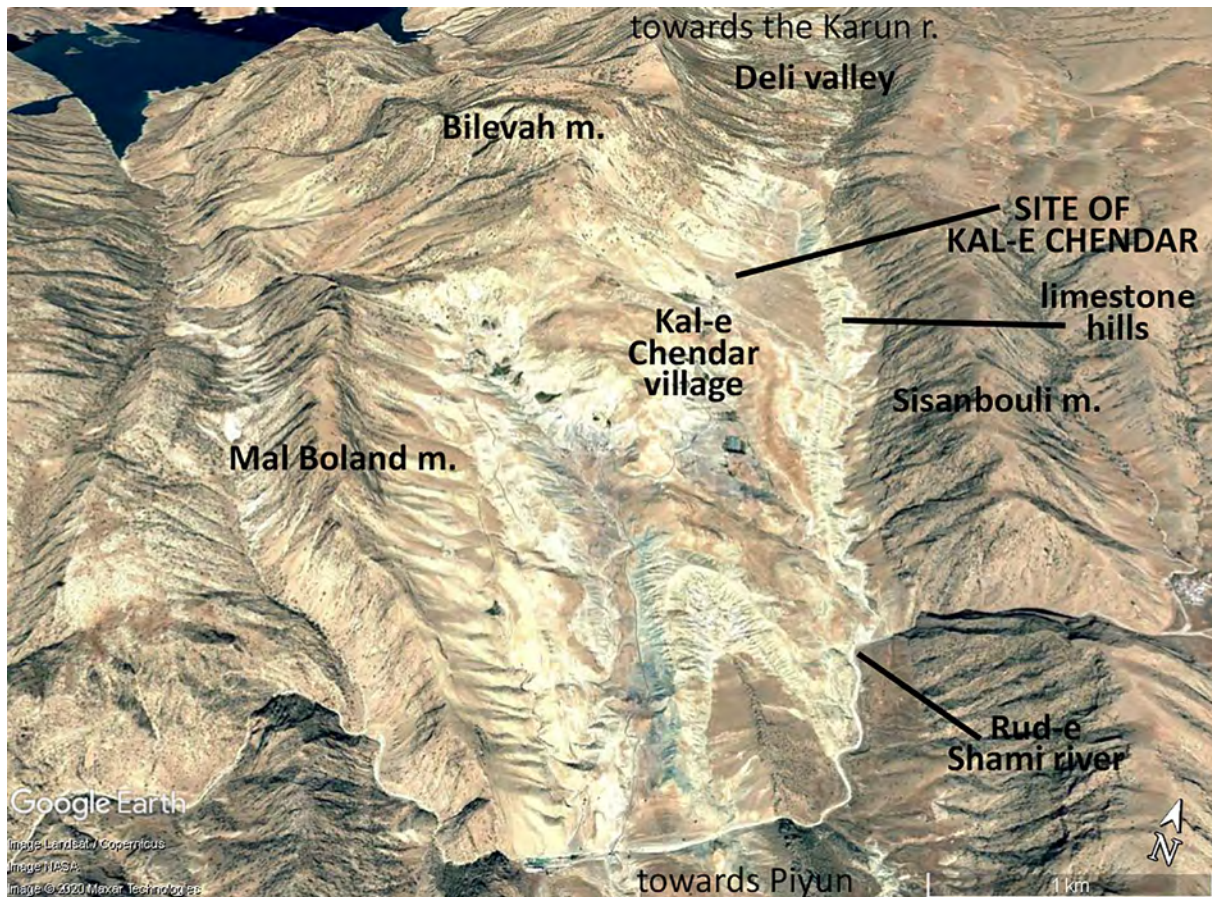


Figure 5.6 - Valley of Shami. Satellite image visible on Google Earth acquired on 9-23-2010 (image Landsat/Copernicus; image NASA © 2020 Maxar Technologies) (elaboration by the author)

The soil map and the characteristics of the physical geography, such as the irregularity of the terrain slope, seem to indicate that the valley of Shami has a rather low potential for agricultural production. Nevertheless, there is in the valley an uncommon availability of water, in particular of perennial springs; probably this explains the high number of orchards registered by the Iranian topographic map, which is exceptional if compared to their infrequency in the surrounding areas. Sheep and goat herding probably constituted a significant economic resource, due to the mountainous conformation of the area. This picture seems to be consistent with the written sources which, even if only in a general way, state that, during the Achaemenid empire and the Seleucid kingdom, in the mountains of Elymais pastoralism was the main means of subsistence, followed by agriculture and warfare.³⁹ A third, possible resource in the area is constituted by timber exploitation. The written sources of the neo-Assyrian period and the classical authors attest to the exploitation of trees from the Zagros, such as junipers and oaks, referring in particular to the northern Zagros area, where the rainfall allows the development of a more thick forest than in Elymais.⁴⁰ Moreover, Pliny the Elder (*Nat. Hist.* XII.38) also mentions the use of juniper (*Juniper excelsa*) for the production of drinks and fumigation: the importance of this aromatic plant was such that it was imported, according to the author, in Arabia.⁴¹ Even if the maps of the current vegetation indicate a strong deterioration of the forest cover, it seems plausible that in the Hellenistic and Parthian periods the forest was less degraded than today.

³⁹ Briant 1976, 169-172, 177-181; 1982, 67-77; Potts 2014, 117-118; Balatti 2017, 178-183; 207-208, 212-213, 239-240, 269-286; Salaris 2017, 51-55, 359-361, 363-365; Salaris, Basello 2019.

⁴⁰ Briant 1976, 168; Balatti 2017, 319-320. On the characteristics of the oak and the juniper in relation to building construction techniques: Moorey 1994, 348-349, 351-352, 355-358.

⁴¹ Potts 2019.

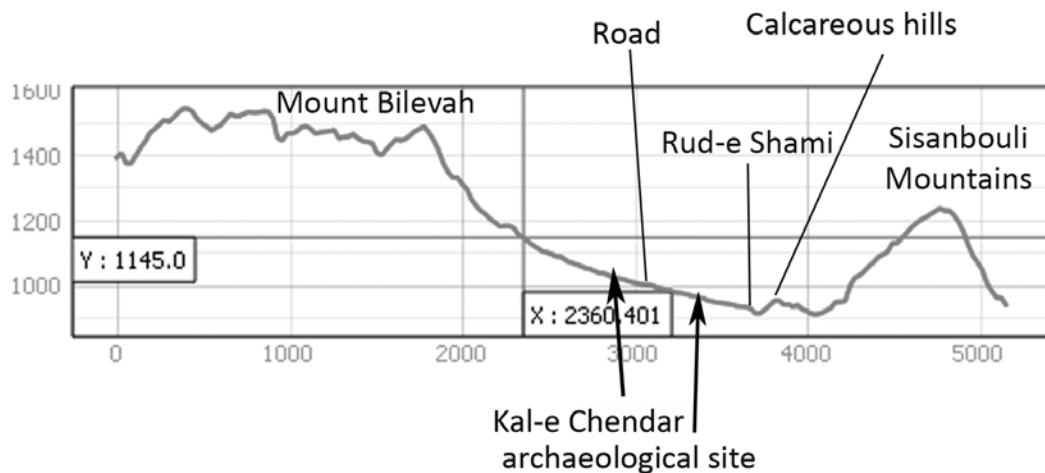


Figure 5.7 - Section of the valley of Shami in correspondence of the archaeological site, west-east direction. Elaboration from DSM ALOS WORLD 3D, 30 m resolution (©JAXA) (elaboration by the author)

5.2 Remote-sensing analysis of the Kal-e Chendar area

Along with anomalies detection on the archaeological area of Kal-e Chendar, the observation of satellite imagery has been undertaken to shed some light on the existence of further sites or structures in the area surrounding the site.

A panchromatic high-resolution (50 cm) satellite image GeoEye-1 acquired the 2010-09-23 (©Digital Globe) as well as Bing aerial photos (©2019 Microsoft Corporation) and several satellite images visible on Google Earth⁴² were used alongside topographic maps having a scale 1:50,000 and produced by the National Geographic Organization between the year 1999 and the 2002.⁴³

The remote sensing analysis is rather difficult in highlands since the archaeological record has generally a low visibility. Indeed, on mountainsides, archaeological stratification develops with difficulty due to the shallow soils, the high slope, and the abundance of stones. Also factors such as the occurrence of landslide events⁴⁴ and the reuse of the stone building material⁴⁵ should be taken in consideration, as illustrated in the case of Kal-e Chendar. Moreover, settlements are usually of small size and dispersed on a wide area, thus being difficult to be identified.⁴⁶ Nevertheless, the low density of population and of human-related activities –as compared to plain areas– could allow sometimes a better preservation of ancient structures.⁴⁷

An attempt has been made to identify anomalies that may indicate the existence of archaeological remains, even if they must be confirmed throughout supplemental surveys as well as stratigraphic excavations.

⁴² Image acquired the 4-22-2020 (©CNES/Airbus); image acquired the 12-25-2019 (©CNES/Airbus); image acquired the 5-27-2017 (©CNES/Airbus); image acquired the 4-6-2017 (©CNES/Airbus ©Google); image acquired the 1-23-2017 (©CNES/Airbus); image acquired the 10-24-2016 (©CNES/Airbus); image acquired the 8-24-2013 (©CNES/Airbus); image acquired the 8-11-2013 (©CNES/Airbus); image acquired the 11-11-2011 (©Maxar Technologies); image acquired the 8-24-2011 (©Maxar Technologies); image acquired the 9-23-2010 (©Maxar Technologies); image acquired the 10-15-2009 (©Maxar Technologies); image acquired the 7-4-2007 (©Maxar Technologies, image NASA).

⁴³ Sheet 5954III Keveshk (2002), sheet 5954II Tarashok (2002), sheet 5953IV Chamreyhān (1999) and sheet 5953I Īzeh (1999) (©NGO, Army of the Islamic Republic of Iran). However, slight differences were found in the position of the elements on the topographic maps with respect to the remote sensing images.

⁴⁴ For landslide events near the site of Kal-e Chendar see chapter 3.

⁴⁵ On the building material found at the site, see chapter 6.

⁴⁶ On the issue of remote-sensing analysis for archaeology in mountainous areas: Parcak 2009, 125-126; Reinhold et al. 2016, 46-47, 58; Messina, Mehr Kian 2019a, 41, 46-47. On the problems of surveying: Banning 1996, 29-31; Faraji et al. 2015, 65-66; Jayez et al. 2019, 57. On the matter see also: Wilkinson 2003, 42, 185, 188, 196-198, tab. 4.1.

⁴⁷ Wilkinson 2003, 42.

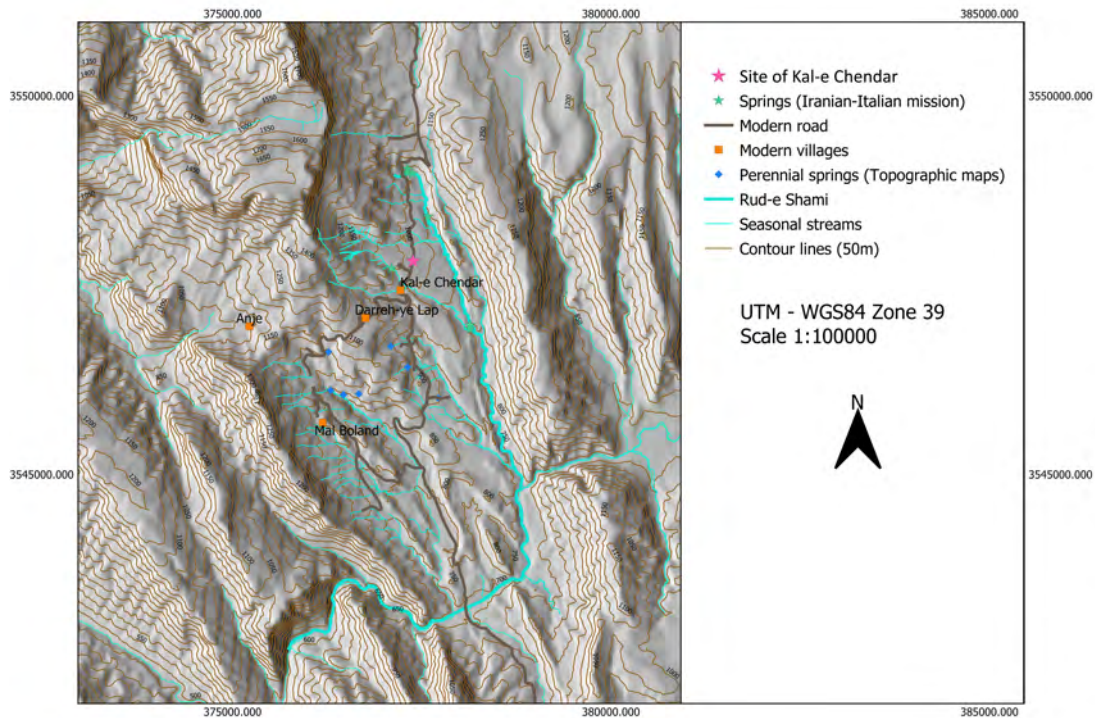


Figure 5.8 - Valley of Shami: hydrology, modern villages and contour lines (50m). DSM ALOS WORLD 3D, 30 m resolution (©JAXA) (elaboration by the author)

Numerous and extensive anomalies were found throughout the remote sensing analysis immediately south-east of the site of Kal-e Chendar, between Qal'eh-ye Shor Koda and the Rud-e Shami. In this area there is the greatest concentration of anomalies within the Shami valley (Figs 5.9-10). The zone is plainer than the rest of the valley and is extensively occupied by fields, thus it seems probable that this factor could have enhanced the visibility, leading to an easier detection of anomalies on satellite images.

Particularly interesting is an area about 12 ha wide, where numerous and ample brighter patches (Figs 5.11: 1, 12) having a peculiar shape seem to suggest pre-existing structures.⁴⁸ While in the area fields are usually enclosed by fences as well as crossed by walls built in undressed stones,⁴⁹ in this case, some stone walls (Figs 5.11: 2, 12), showing a non-regular shape or a direction different from the surrounding ones, could suggest the presence of ancient structures. Immediately to the south, in another field, there are several stone mounds (Figs 5.11: 3, 13) and spots of lighter color (Fig. 5.11: 4) (like those previously described) which cover an area of about 18 ha. The unusual shape and extension of stone mounds could suggest that they represent decayed buildings. Moreover, piles of stones are often found in terraced fields, as they are the result of the clearance of the cultivated terrain;⁵⁰ in these cases, stones could be accumulated above older pre-existing or buried structures in order to optimize the availability of surface, as was the case for the platforms of our Trench 13.⁵¹ The shape as well as the large number of stone mounds and bright patches constitutes a clue about the existence of more ancient structures. A little further to the south-west a dark strip delimited on its borders by two brighter lines is visible on several remote-sensing images (Figs 5.11: 5, 14, 15). It is about 192 m long and 3 m wide and has a linear trend.⁵² It seems to connect two seasonal streams. This element, as well as the visual characteristics of the feature (width and color), suggest a possible identification as an old

⁴⁸ On the interpretation of patches or lines of bright color indicating buried structures: Piccarreta 1987, 121-126, 155-163; Piccarreta, Ceraudo 2000, 104-106.

⁴⁹ On undressed stone walls in fields in mountainous areas see for example: Wilkinson 2003, 52-55, fig. 4.4a.

⁵⁰ On stone mounds in agricultural fields: Wilkinson 2003, 53, 55, fig. 4.5.

⁵¹ See chapter 6 and Bucci et al. 2018, 71, fig. 13.

⁵² The dark linear anomaly is about 2-3 meters wide; if, however, the lighter borders are considered too, the width is approximately 8 m.

channel.⁵³ Nearby, two large bright patches with several white-color lines departing from them can be observed on an image from Google Earth acquired the 7-04-2007 (©Maxar Technologies, image NASA) (Fig. 5.15). The patches measure approximately 1,500 and 500 m². It is possible that these features are to be interpreted respectively as clusters of buildings or buried settlements and as roads or paths no longer in use. There is no trace of these anomalies in the most recent satellite images, except for few bright spots of much smaller dimensions that appear on the high-resolution satellite image dating back to 2010-09-23 (©Digital Globe) (Fig. 5.14).

In the south-western portion of the Shami valley there is a bright strip characterized by blurred contours (Fig. 5.16). The feature has a width of about 6 meters and has a regular course; at one point it seems to fork; it appears to connect two sections of seasonal streams. In the area usually paths appear on satellite imagery as bright lines and could be up to two meters wide. It remains doubtful whether this element could be identified as a non-modern road, presumably of significant size, or as a completely dry canal; the first hypothesis seems the most plausible, however, due to both the color and the width of the feature. Indeed, on the panchromatic high-resolution satellite image analyzed, modern abandoned tracks and paths usually take the aspect of bright lines and could be several meters wide.

5.3 On-ground data analysis of the Kal-e Chendar area

Traces of possible ancient structures around the site of Kal-e Chendar were identified by our expedition (Fig. 5.17). They have not been investigated by stratigraphic excavations yet, thus the existence of phases dating back to the Hellenistic and/or Parthian periods in such specific contexts remain to be confirmed.

A little higher than the site, along the colluvial slope of the Bilevah mountain, some structures were identified in 2016. The presence of few buildings up the mountainside, consisting in recent nomad huts, is reported already by Stein.⁵⁴ It seems difficult, however, that these dwellings are the same remains found during our survey, as the latter are located higher up the mountainside.

The remains of a terrace (Fig. 5.18) were found at an altitude of about 1,060 m asl and about 320 m to the west of the Upper Terrace. The structure is partially preserved in its south-eastern corner and along its southern and eastern facades. Undressed big sized stones, regularly coursed, make up the retaining wall along with few boulders. The dating of the structures remains unknown, as no pottery sherds were found nearby. Big sized partially worked stones made up the base of the wall of recent buildings in the Saleh Vand area, as well as possibly more ancient structures (see below); however, boulders do not seem to be employed in recent constructions. The use of big sized stones partially worked as well as of boulders is attested on the site by the Upper Terrace,⁵⁵ as well as by the structure unearthed in Trench 7,⁵⁶ possibly another retaining wall. Large boulders are employed in the so called 'cyclopean wall', of unknow date, identified by Stein.⁵⁷ Also the tombs are constructed using in some parts big sized stones and boulders, in particular for the roof.⁵⁸ The use of both boulders and large, partially worked lithic blocks is testified also by the monumental terrace walls of the sanctuaries of Bard-e Neshandeh and Majid-e Sulayman, in particular for the lower courses.⁵⁹ Thus, it is possible

⁵³ On remote sensing images ancient canals could appear as dark strips, sometimes bordered by lighter lines (Wilkinson 2003, 47-52, tabs. 4.2, 4.4; Altaweel 2005, 157-160). Canals from perennial watercourses are generally slightly wider than one meter, but those exploiting water from seasonal streams are wider. For a case study of ancient canals in the Khuzestan plain, see for example: Walstra et al. 2010. Although the possibility seems less plausible, it could not be excluded that the anomaly is instead a 'hollow way', which, typical of plain areas, may have similar visual characteristics (Wilkinson 1993; 2003, 111-117, tabs. 4.3-4.4; Altaweel 2005, 153-157; Casana 2013).

⁵⁴ Stein 1940, 143, plan 10.

⁵⁵ Trench 2: Baqherian et al. 2016, 77, figs 9-10; Messina, Mehr Kian 2016, 445-446; Trench 4: Baqherian et al. 2016, 83; Messina, Mehr Kian 2016, 447. On the Upper Terrace see chapter 6.

⁵⁶ Bucci et al. 2017, 14-15.

⁵⁷ Stein 1940, 157, fig. 10.

⁵⁸ Messina, Mehr Kian 2014, 73-74; Bucci et al. 2016, 83-84; Messina, Mehr Kian 2016, 447; Bucci et al. 2017, 17-23; Messina, Mehr Kian 2019b, 279-281; Cellerino, Foiatta 2020, 59. On the tombs see chapters 6 and 11.

⁵⁹ Ghirshman 1976, 18, 55, pls IX-XIII, L, LII-LVIII.

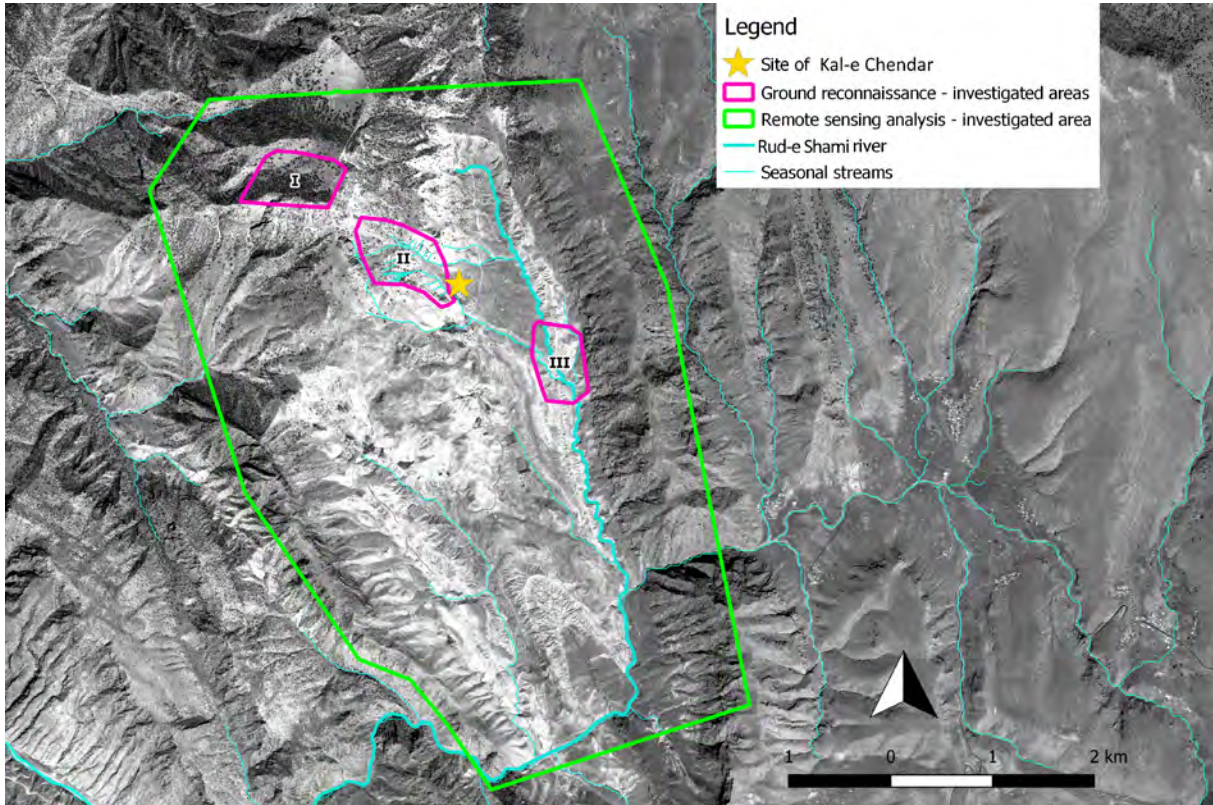


Figure 5.9 - Valley of Shami: the areas covered throughout both the ground reconnaissance survey carried on by the *Iranian-Italian Joint Expedition in Khuzestan* and the remote-sensing analysis. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)

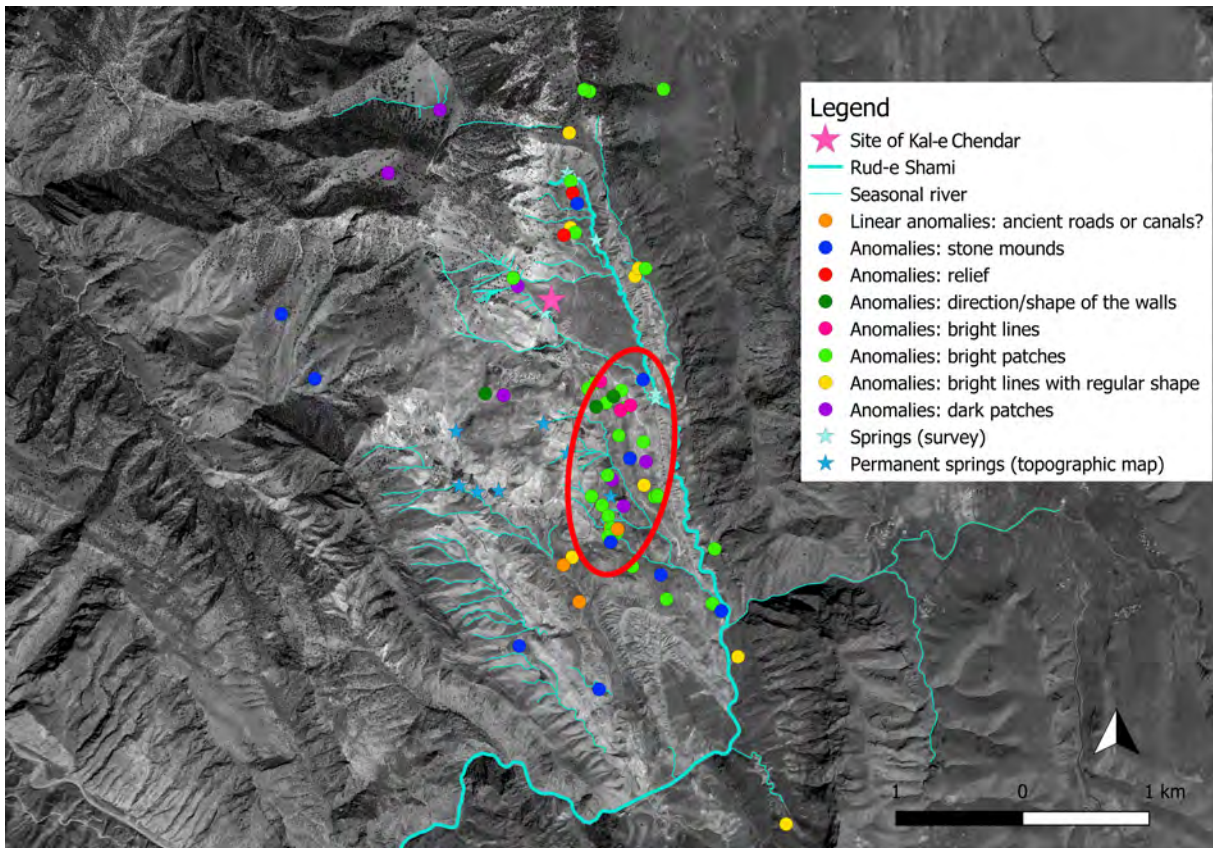


Figure 5.10 - Valley of Shami: detection of anomalies. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)

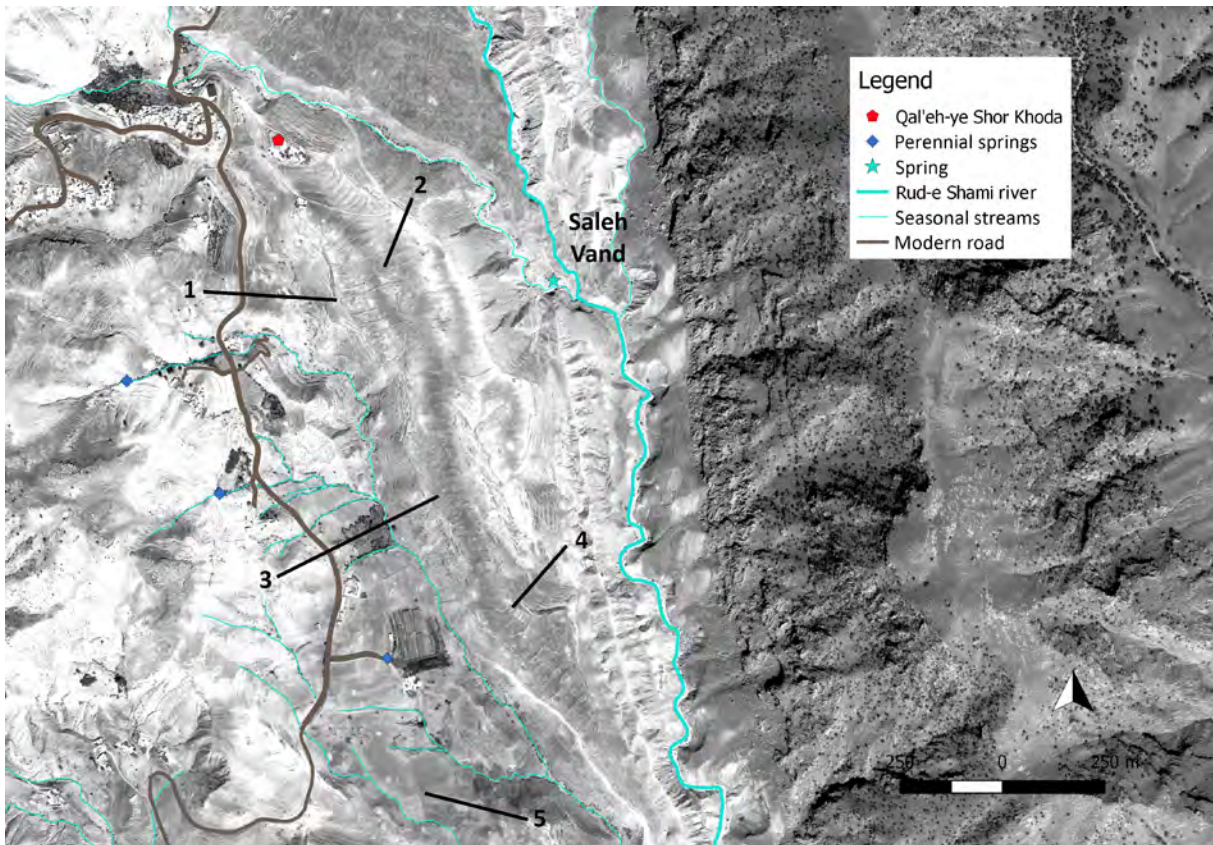


Figure 5.11 - Valley of Shami: detection of anomalies to the south of the site of Kal-e Chendar. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)

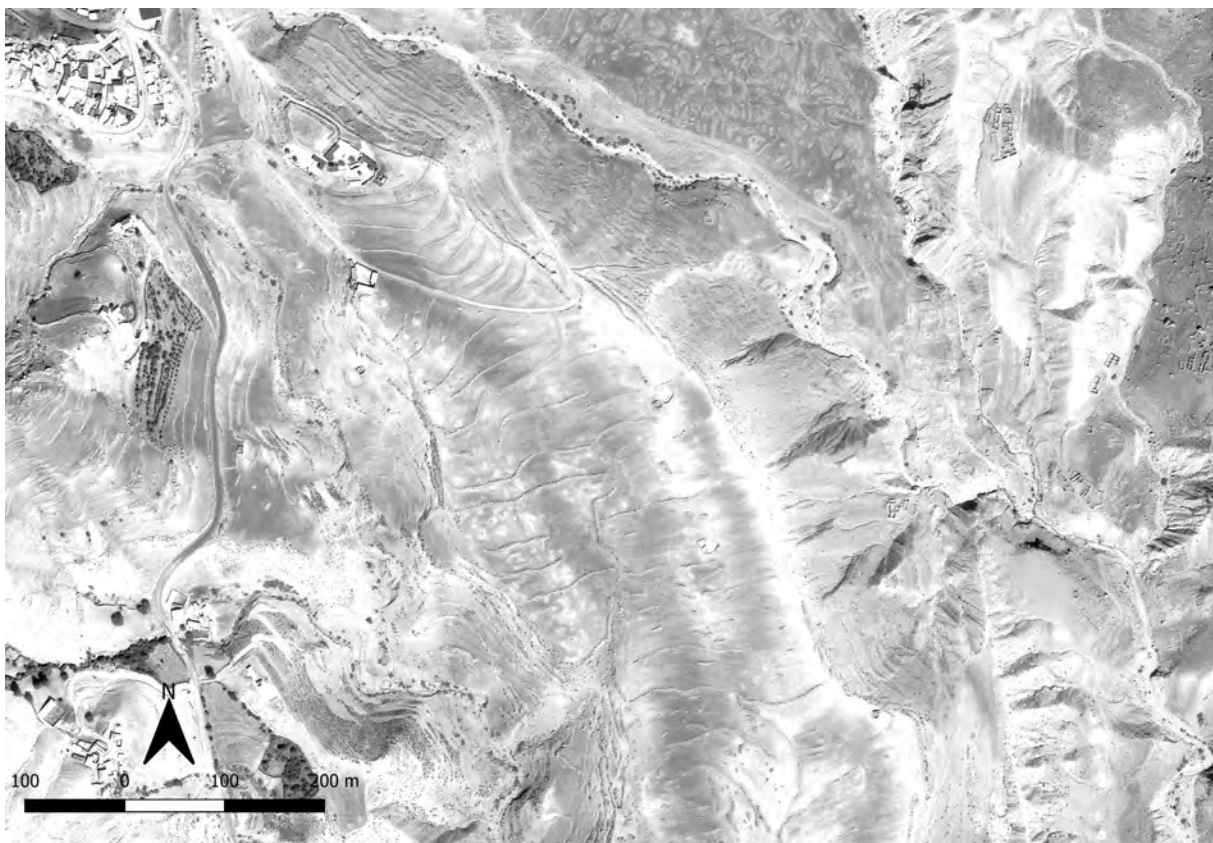


Figure 5.12 - Valley of Shami: detection of anomalies to the south of the site of Kal-e Chendar, detail of the northern part, with the anomalies ns. 1-2. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)

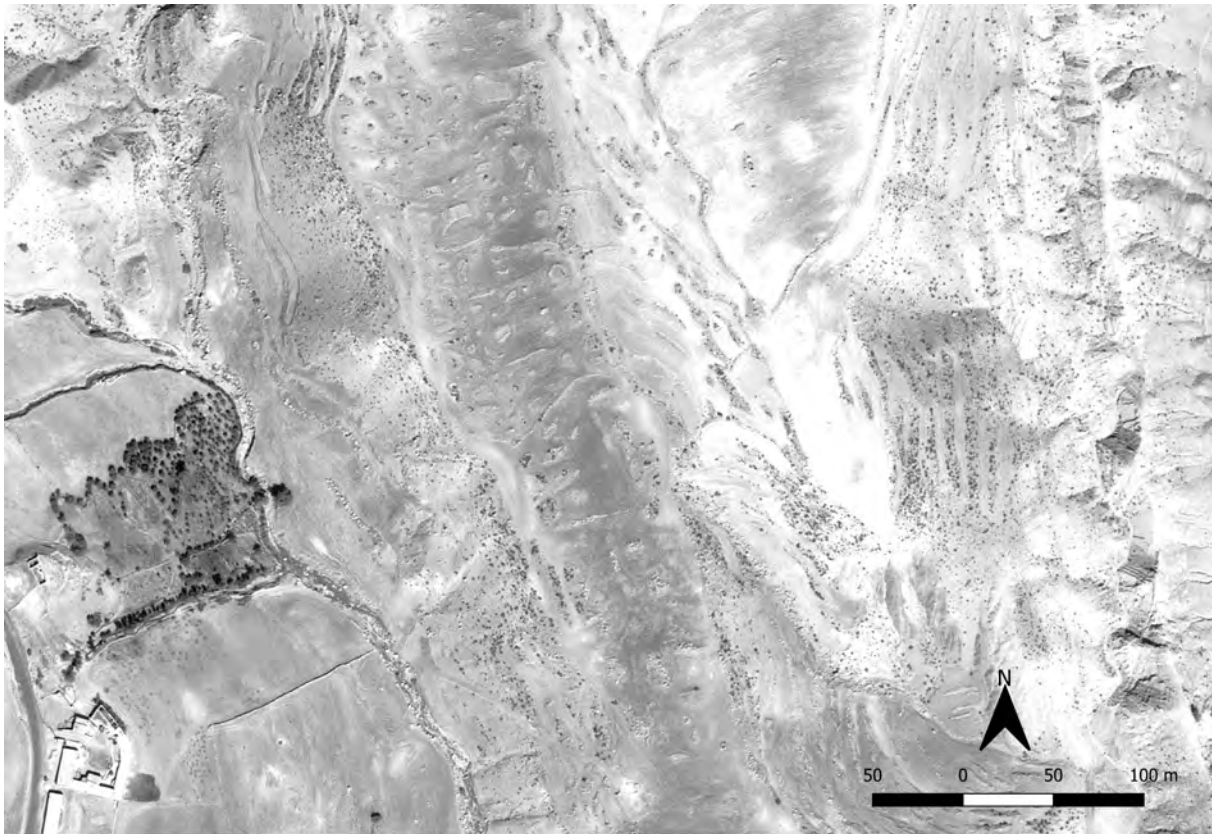


Figure 5.13 - Valley of Shami: detection of anomalies to the south of the site of Kal-e Chendar, detail of the central part, with the anomalies ns. 3-4. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)

that the monumental terrace found in 2016 could be identified as the substructure of other religious contexts, maybe connected to the lower sanctuary.

About 230 m to the west of the terrace, at an elevation of about 1,100 m asl, there are further ruined structures (Fig. 5.19). The walls are made of undressed stones and on the upper part are characterized by irregularly coursed small sized stones, while in some cases big sized stones and worked stone blocks regularly coursed made up the base. These are probably, at least in part, rather recent dwellings, on the base of the state of conservation and of the construction technique; no pottery was found nearby. It is possible that in some cases building materials from more ancient structures was re-used in modern times, as the presence of some regularly squared block seem to suggest. Carefully worked stone blocks are found much higher on the Bilevah Peak, where a complex of buildings, sometimes reported as a fortress and probably dating from the Parthian to the Islamic periods was found (see below). Moreover, the practice of reusing regularly squared building material in recent buildings is attested frequently on the site of Kal-e Chendar.⁶⁰

Even if other interpretations could not be excluded, it seems unlikely that such features could represent the remains of a settlement, because of their location high up the colluvial slope. By the way, since further investigations are needed in order to verify the date, these interpretations remain to be confirmed.

The remains of small fortress, known locally as Qal'eh-ye Vali, were found to the south-west of the site, lying at an altitude of 1,070 m asl. The structure is located on a small hill on the eastern slope of the Bilevah mountain, from which the site of Kal-e Chendar can be seen clearly (Figs 5.17, 5.20). The

⁶⁰ In Trench 1 (Bucci et al. 2017, 12), Trench 8 (Bucci et al. 2017, 15-17; 2018, 63-64), Trench 10 (Bucci et al. 2018, 66-67), and Trench 12 (Bucci et al. 2018, 69, 71) as well as for the building material (Messina, Mehr Kian 2014, 71-74, 76, fig. 7; Baqherian et al. 2016, 74, 84; Messina, Mehr Kian 2016, 442; Bucci et al. 2017, 11; 2018, 59; Messina, Mehr Kian 2019b, 276-278). On the excavation campaigns see chapter 6.

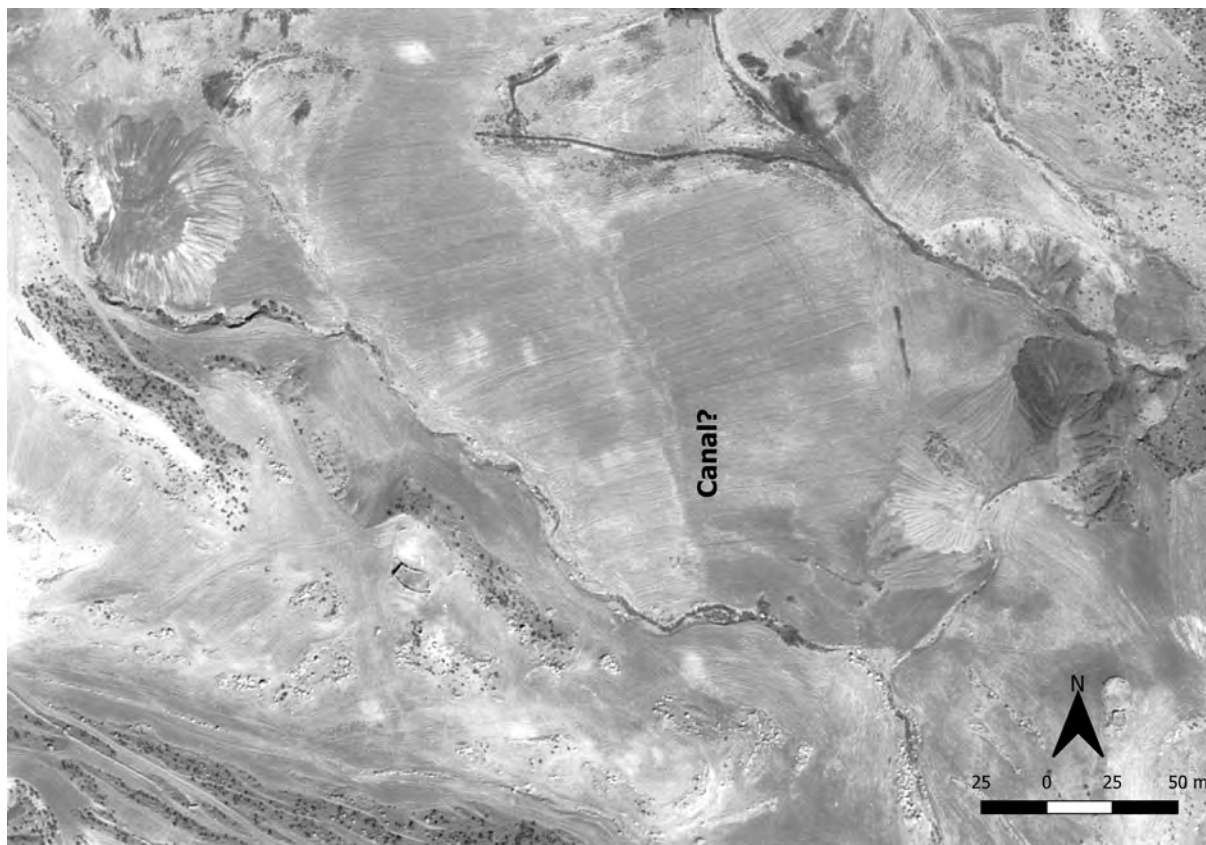


Figure 5.14 - Valley of Shami: detection of anomalies to the south of the site of Kal-e Chendar, detail of the southern part, with the anomaly n. 5. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)

structure measures approximately 200 m² and is composed by a wide room flanked on the southern and eastern sides by four (?) smaller chambers (Fig. 5.21). The western wall, approximately 3 m wide, seem to be particularly massive. What remains of the ruined walls shows the use of partially worked stones of little and medium size (Fig. 5.22). The plan and the building technique present similarities with two qal'eh recognized by a survey in the nearby areas of Dasht-e Gol and Iveh, ca. 17 km to the north of the site of Kal-e Chendar, where remains of structures of Parthian period were also found. The fortress named Qal'eh-ye Kunji Kar⁶¹ is located in the area of Dasht-e Gol, on the northern side of the river Karun, while Qal'eh-ye Atabeqi⁶² is situated in the Iveh area, on the southern side of the river. Both structures dates back to the Timurid period and are slightly bigger than Qal'eh-ye Vali, measuring respectively 570 and 2,500 m². The walls of Qal'eh-ye Atabeqi shows the use of dry little sized partially worked stones. The comparisons between the three qal'eh suggest that what remains visible of the fortress overlooking the Upper Terrace of Kal-e Chendar could be likewise related to the Timurid period. Nevertheless, it is possible that the area was frequented already during the Parthian period, as testified by ceramic fragments in common ware found close to the building.⁶³

A built ruined area, probably including also a fortress or used as such since a given moment, has been discovered on the top of the Bilevah peak, in an area locally know as Char Qal'eh, at an elevation of 1707 m asl. It is positioned along the southern edge of the top of the Bilevah, from where it is possible to see the valley below (Fig. 5.17). The structure is made up of massive stone walls which seem to belong to a fortress or a fortified complex (Figs 5.23-24). The construction material consists largely of partially carved stones, but regularly squared blocks, some of which show the signs of the use of

⁶¹ Wright, Kossary 1979, 7, 18, fig. 5: DG3.

⁶² Wright, Yaghma'i 1979, 22-26, fig. 8: IV7.

⁶³ On Qal'eh-ye Vali see also: Messina and Mehr Kian 2014, 69, fig. 9; Messina 2015, 198, fig. 8; Messina, Mehr Kian 2016, 441; Baqherian et al. 2016, 71, 85, figs 4-5; Bucci et al. 2017, 11, fig. 1; Messina, Mehr Kian 2018, 299, fig. 4; 2019b, 275. The building is mentioned also by Roman Ghirshman (Ghirshman 1976, 237).

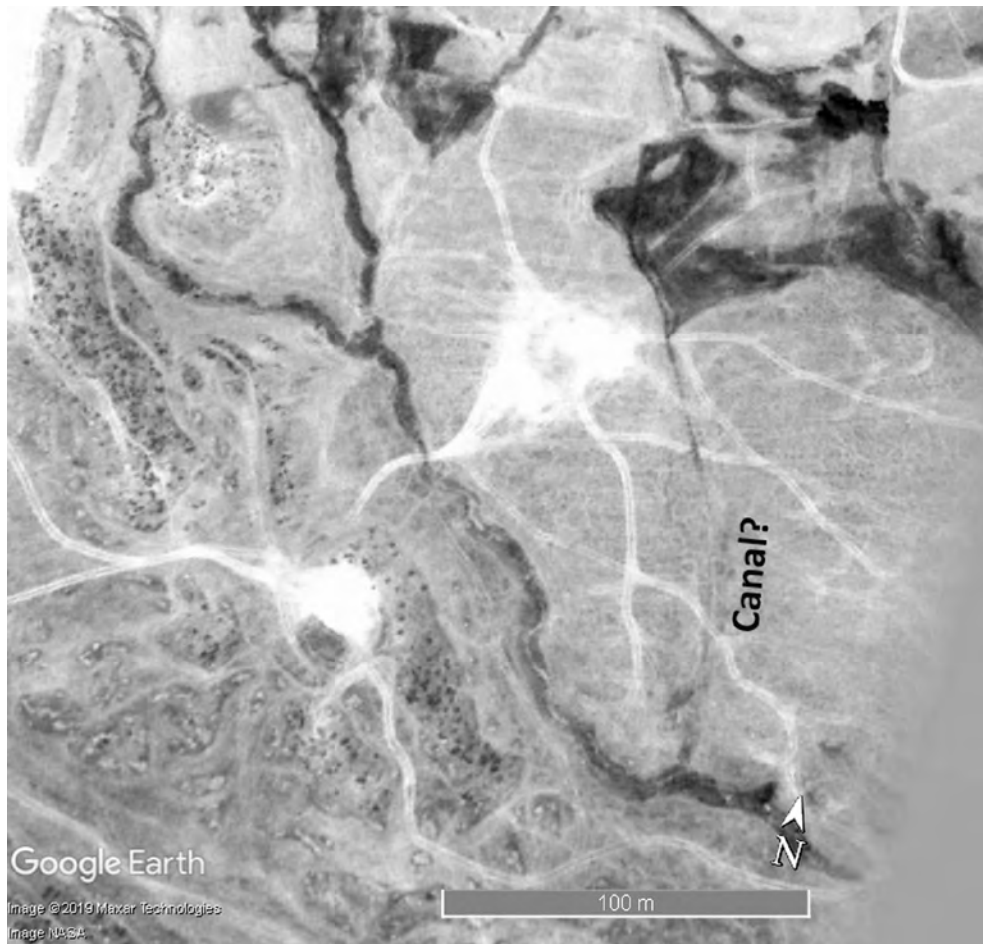


Figure 5.15 - Valley of Shami: detection of anomalies to the south of the site of Kal-e Chendar, detail of the southern part, with the anomaly n. 5. Image from Google Earth acquired the 2007-04-07 (Image©2019 Maxar Technologies, NASA) (elaboration by the author)

iron clamps or circular hollows, as well as monumental lithic slabs and a large stone drum also appear (Figs 5.25-27). Residual potsherds dating to the Parthian and Islamic age was found near the site. What remains of the building likely dates back to the latter period, but it seems that the area was somehow settled already during the Arsacid era.⁶⁴

Nearby a small chamber dug into the rocky surface was detected (Fig. 5.28). The element is probably a tomb found empty. It presents a polished façade and a square opening measuring about 50x30 cm.⁶⁵ In the plain of Izeh, not far from the small sanctuary of Hung-e Azhdar and about 20 km to the southeast from the site of Kal-e Chendar, there is a very similar rock-cut niche which has been identified as an astudan; it is possible that the tomb dates back to the Sasanian period, when astudan are mostly testified.⁶⁶ Moreover, two similar rock-cut chambers were found in the area of Susan, about 10 km from the Shami valley as the crown flies⁶⁷. If, generally, rock-cut niches or chambers are usually dated to the Sasanian period and related to the Zoroastrian funerary practices, it is actually quite difficult without accompanying inscriptions or funerary objects to establish a firmly date and a unique religious background.⁶⁸

⁶⁴ On the qal'eh on the Bilevah peak see also: Messina 2015, 200, fig. 8; Messina, Mehr Kian 2016, 443; Baqherian et al. 2016, 85, figs 4, 18-19; Bucci et al. 2017, 11; Messina, Mehr Kian 2018, 301, fig. 4; 2019b, 283-284, figs 13-14.

⁶⁵ See also: Messina, Mehr Kian 2016, 443.

⁶⁶ Faraji et al. 2015, 71-72, fig. 10.

⁶⁷ Stein 1940, 139; Mehr Kian 2006, 614; Farjamirad 2015, 396.

⁶⁸ Boucharlat 2014, 134; Cereti, Gondet 2015, 376-378. On rock-cut niches and chambers in south-western Iran see: Boyce, Grenet 1991, 94-106, 120-121; Huff 2004, 596-602, 618; Boucharlat 2014, 128, 133-135; Farjamirad 2015, 13-14, 21-23, 27, 100-118, 213-216, 270-295; 2016, 131-132, 134-135.

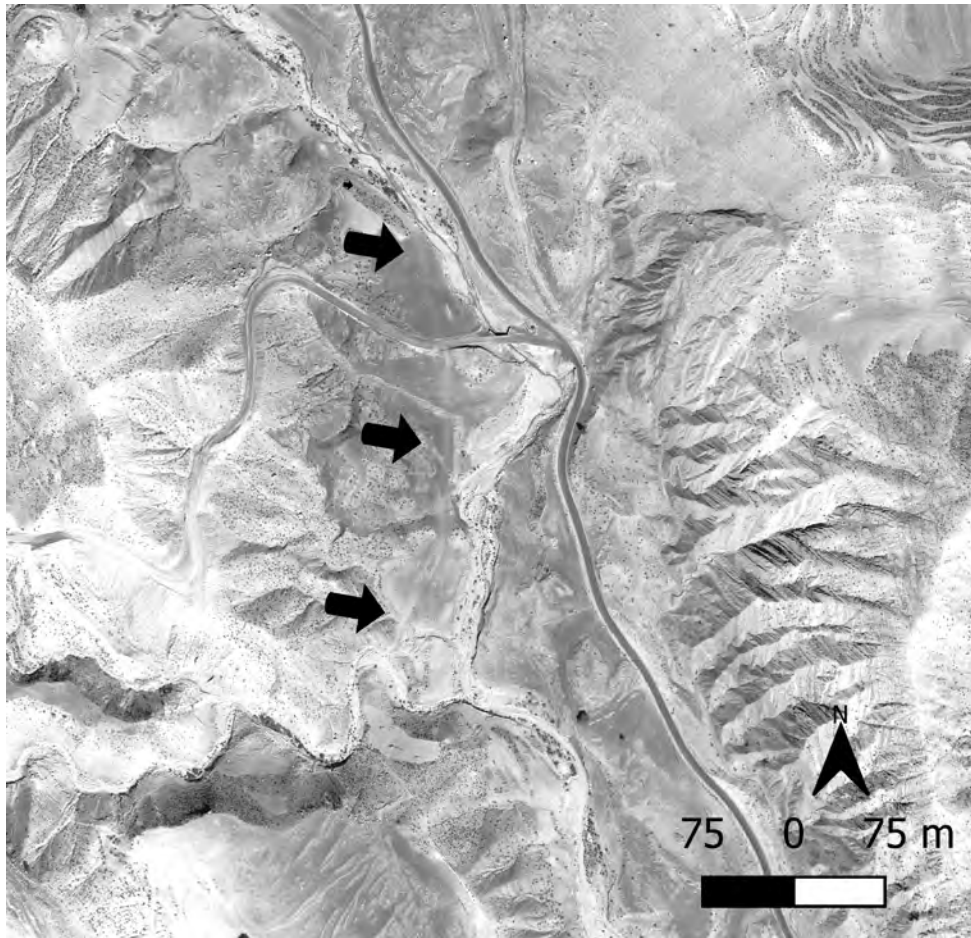


Figure 5.16 - Valley of Shami: detection of linear anomaly in the south-eastern part of the valley. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)

Just south to the site of Kal-e Chendar, immediately to the east of the modern road, there are the remains of a further qal'eh, known locally as Qal'eh-ye Shor Khoda (Figs 5.17, 5.29). The building is located on a low relief, at about 965 m asl. Although the complex of the structure currently visible dates to the modern age, the on-site investigation has identified possible ancient elements in the wall texture.⁶⁹

Further evidence was identified by our expedition in the Saleh Vand area, immediately south-east of the excavation area, near the Rud-e Shami watercourse (Fig. 5.17).

Here, between the Sisambouli reliefs and the limestone hills, east of the Rud-e Shami, there is a ruined village, which can be seen clearly also on high-resolution satellite imagery (Fig. 5.30). The houses are made up of little sized stones; in some cases, big sized stone blocks were used in the base of the walls (Fig. 5.31). The construction technique and the plan of the buildings are very similar to the houses of the modern village of Kal-e Chendar and to the ruined dwellings that occupy the area of the site, suggesting that the testimonies are quite recent. Indeed, the presence of a previous settlement in this zone was referred by the people of the village of Kal-e Chendar.

The high-resolution satellite image shows the remains of less preserved buildings on the western side of the watercourse. These structures are almost completely collapsed or buried, suggesting that they belong to an earlier settlement phase respect to the village mentioned above (Fig. 5.30). The visit carried out in 2016 verified the presence of several groups of structures composed by one or more

⁶⁹ Messina 2015, 198, fig. 8; Messina, Mehr Kian 2019b, 275.

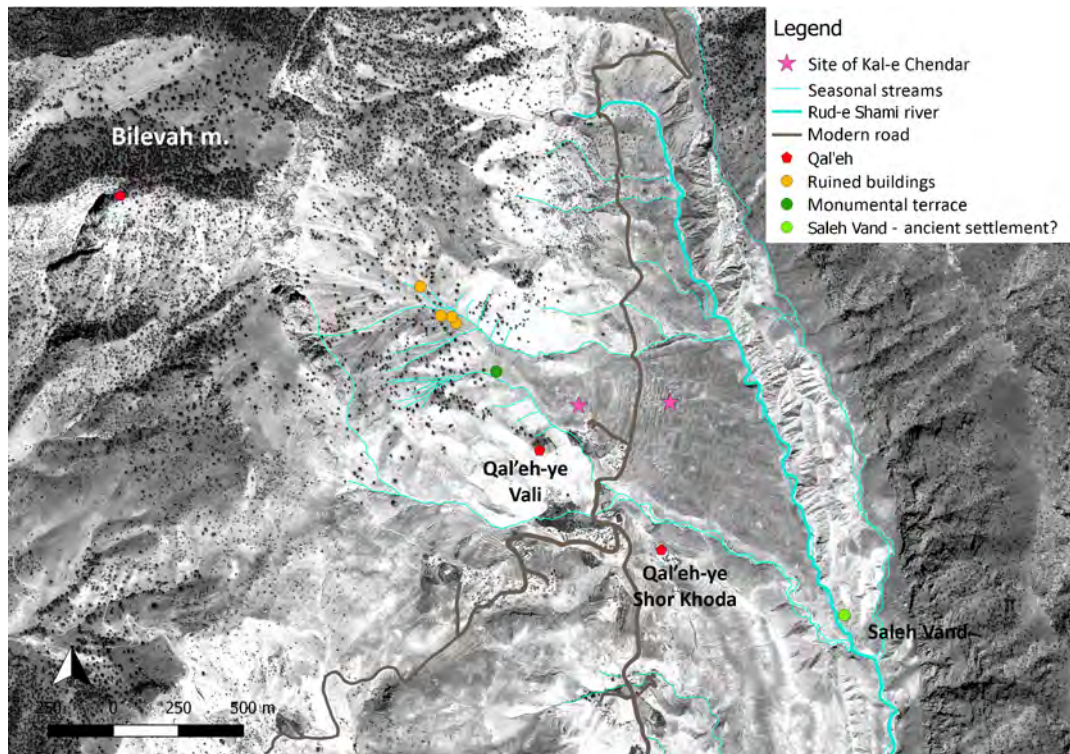


Figure 5.17 - Shami Valley: archaeological structures identified by the Iranian-Italian Joint Expedition in Khuzestan. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)

rooms (Figs 5.32). Their walls are partially preserved at the base and are constructed by undressed big and medium sized stones. The stone blocks are mostly roughly cut. Similar structures were identified, for example, during a survey near Behbahan: they are related to the Middle-Islamic period on the basis of the pottery found in the area.⁷⁰ In the case of Saleh Vand, the overmentioned buildings can possibly be dated to the Parthian period. Indeed, some ceramic fragments dating back to this period have been found in the area: however, their presence is not necessarily an indication of a settlement of this period, as, given the slope of the ground, the ceramic could come from the sanctuary. Thus, the date of the structures needs to be confirmed by archaeological excavation. Other remains in the area are constituted by a massive wall which could be perhaps interpreted as a terracing wall (Fig. 5.33). Its texture is characterized by roughly coursed undressed stones of big as well as medium size. Another retaining (?) wall stands out for the use of huge irregular boulders, amid which little sized stones were laid (Fig. 5.34). This evidence could possibly be related to the so-called cyclopean wall mentioned by sir Aurel Stein and registered in other parts of the colluvial slope.⁷¹ Three funerary stelae dating back after the beginning of the Islamic era were also found in the area (Fig. 5.35). Moreover, immediately to the north-west, there are numerous stone mounds, whose shape and orientation seem to be the by-product of the collapse of previous structures (Fig. 5.36). They can clearly be seen on the high-resolutions satellite image and could maybe be related to the remains from Saleh Vand (Fig. 5.30).

5.4. Settlement patterns

5.4.1. The problem of settlements' identification and location

The excavation campaigns conducted at Kal-e Chendar and the investigations in the nearby area so far have not allowed to identify a settlement that could be linked to the sanctuary and the cemetery.

Already Sir Aurel Stein observed that the apparently remote location of a rich sanctuary such as Shami is difficult to explain. The scholar wonders –as a possible reason– if the site in the Shami valley

⁷⁰ Azadi et al. 2018, 114, tavşir 9.

⁷¹ Stein 1940, 157, plan 10.



Figure 5.18 - Shami Valley, eastern side of the Bilevah mountain: possible ancient terrace wall



Figure 5.19 - Shami Valley, eastern side of the Bilevah mountain: ruined building

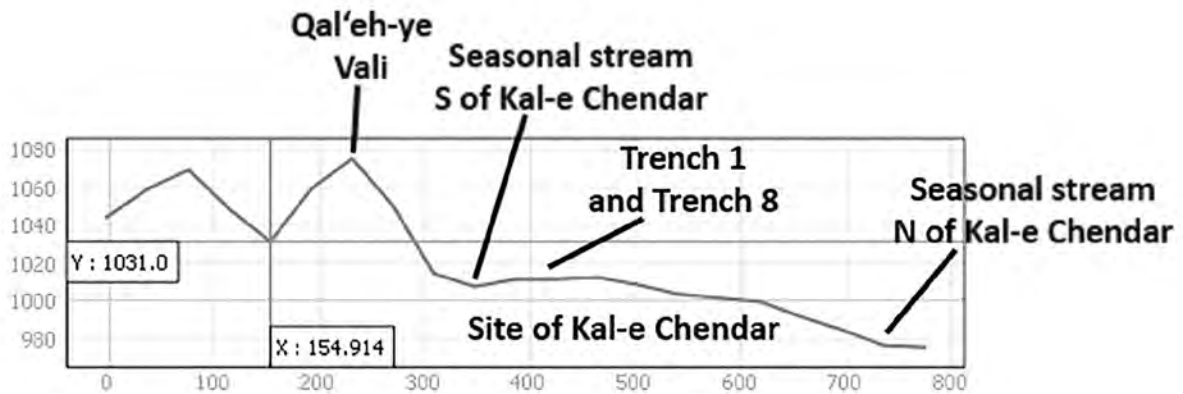


Figure 5.20 - Section of the valley of Shami in correspondence of the archaeological site, south-north direction. Elaboration from DSM ALOS WORLD 3D, 30 m resolution (©JAXA) (elaboration by the author)

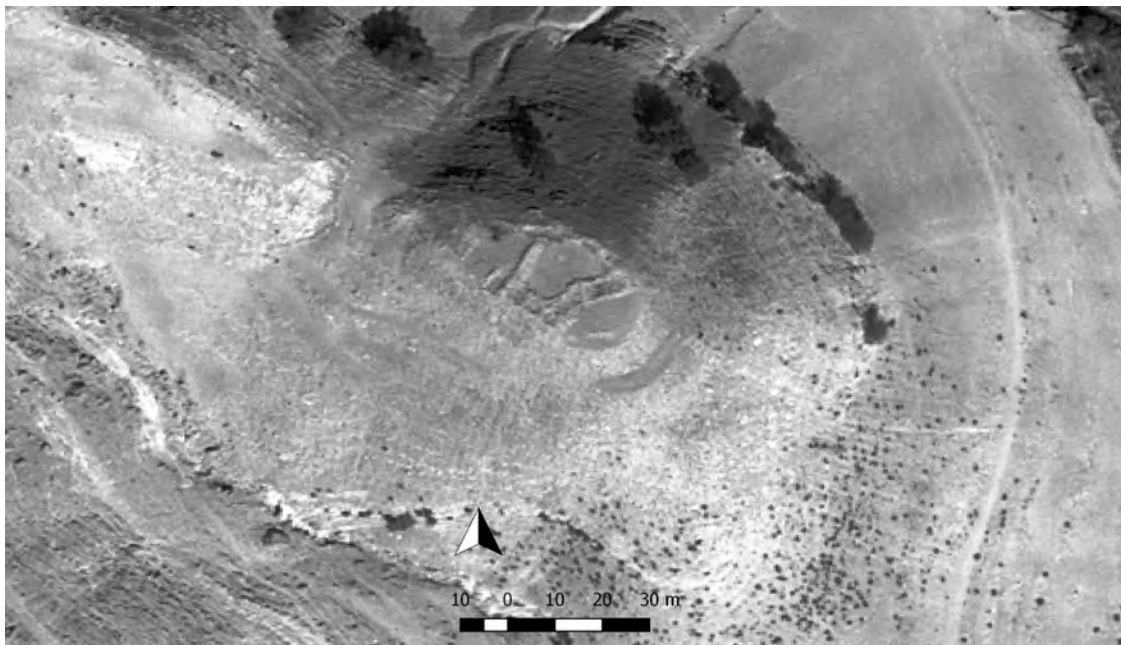


Figure 5.21 - Shami Valley, eastern side of the Bilevah mountain, Qal'eh-ye Vali. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)

could have represented the summer retreat of the Parthian rulers of Mal-e Mir.⁷² Klaus Schippmann, during his visit to the site in 1968, pointed to the presence of building remains about 300 m east of the modern village. The scholar hypothesizes that these could be the dwellings of the sanctuary personnel; however, he did not carry-on archaeological excavation that could confirm his conjecture.⁷³

The lack of evidence for the presence of a settlement dating back to the Hellenistic and Parthian age could suggest that the site was isolated from inhabited areas. It should be noted, however, that the absence of a systematic survey covering the whole valley of Shami along with the limitedness of the areas investigated through stratigraphic excavation does not allow to consider the current lack of evidence as a definite proof for the absence of a settlement near the site. To these considerations must also be added the difficulty in the conservation of archaeological remains in mountain areas, and in particular in this valley, due to the terrain slope as well as phenomena of landslides and run-off. Thus

⁷² Stein 1938, 326; 1940, 156.

⁷³ Schippmann 1970, 233; 1971, 230.



Figure 5.22 - Shami Valley, eastern side of the Bilevah mountain, Qal'eh-ye Vali



Figure 5.23 - Shami Valley, top of the Bilevah mountain, remains of the qal'eh



Figure 5.24 - Shami Valley, top of the Bilevah mountain, remains of the qal'eh

it is not possible to exclude that originally there was an inhabited area of which no trace remains.⁷⁴ Even the low amount of surface materials found at the site can be attributed to the terrain slope and to the difficulty in the formation of the stratigraphic deposit; however, it could also be read as an indication of the absence of a settlement on the site and of the mere presence of religious structures.⁷⁵

The presence of an extensive necropolis which seems, according to the data available, to cover almost the whole archaeological area, suggests that an ancient settlement should be arguably located outside the recognized site. The data from the remote-sensing analysis and from the survey carried on near the site suggest two possible locations.

The first one is represented by the area of Saleh Vand, immediately to the south-east of the surveyed area, where our expedition identified possibly ancient structures and where extensive remains of ruined buildings were detected on the remote sensing imagery (Figs 5.11, 5.17, 5.30). In the area, approximately 10 ha wide, there is a good availability of water, due to the presence of two springs and the proximity with the seasonal watercourse of the Rud-e Shami.

Furthermore, a settlement could be located as well to the south of the seasonal stream that delimits the site of Kal-e Chendar on its southern side, in an area where several but scattered anomalies were identified throughout remote sensing (Figs 5.10-11). The area of interest is about 100 ha wide. In this case too, the physical geography is rather favorable for the installation of a settlement. In fact, the area is not far from the Rud-e Shami and is crossed by some small seasonal streams while, in the southern portion, there is a permanent spring. Moreover, the terrain slope here is much lower than in the rest of the valley, as the area is almost plain (Fig. 5.8). It must be added however that in both cases, the settlements whose existence is here proposed are of very small extension. If one accepts

⁷⁴ On the matter see also: Messina 2015, 200; Messina, Mehr Kian 2018, 299, 301; 2019b, 283-284.

⁷⁵ Messina, Mehr Kian 2019b, 284. The low amount of pottery sherds –both on the surface and in the excavated trenches– found by our expedition, however, seems to be in contrast with the observations of Trudy Kawami during her visit on the site in 1976: 'The entire area is thick with potsherds, most badly shattered and very worn. The typical fabric is light, pinkish-buff with fine bits of vegetable matter. The most common shape observed among the fragments is a small bowl with a ring base, ca. 8 cm high and 14 cm wide with a thin, now-yellowed vitreous glaze. Redware with limestone temper was also observed.' (Kawami 1987, 58).



Figure 5.25 - Shami Valley, top of the Bilevah mountain, remains of the qal'eh, detail of the stone masonry



Figure 5.26 - Shami Valley, top of the Bilevah mountain, remains of the qal'eh, detail of the stone masonry with holes for iron clumps



Figure 5.27 - Shami Valley, top of the Bilevah mountain, remains of the qal'eh, detail of the stone drum



Figure 5.28 - Shami Valley, top of the Bilevah mountain, rock-cut niche

that the ruins of buildings there identified can be dated to the same period of use of the sanctuary and cemetery, it should be also considered that these belong to nothing but a small village, if not a hamlet. The monumental cemetery so far recognized had been used over time by another type of community, not only bigger, but also wealthier.

5.4.2. Settlement patterns at a regional scale

Some recognition surveys held in the nearby of the Shami valley, and in particular in the plains of Izeh and Piyun (to the south), Dasht-e Gol and Iveh (to the north) and Susan (to the east) attest, even if only in a partial way, to the settlement of the region in the Hellenistic and Parthian periods (Fig. 5.37).

The plain of Piyun is narrow and long and has a reduced extension (about 25 km²). A. Godard briefly mentions the discovery of a large ancient settlement located 5 miles afar from the Shami valley: if systematic excavation will confirm such a suggestion, this site could represent one the inhabited areas related to the sanctuary of Kal-e Chendar. Nearby the archaeologist found some tombs comparable to those we found at the site, which date back to the Parthian period. However, the data from the



Figure 5.29 - Shami Valley, Qal'eh-ye Shor Khoda. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)

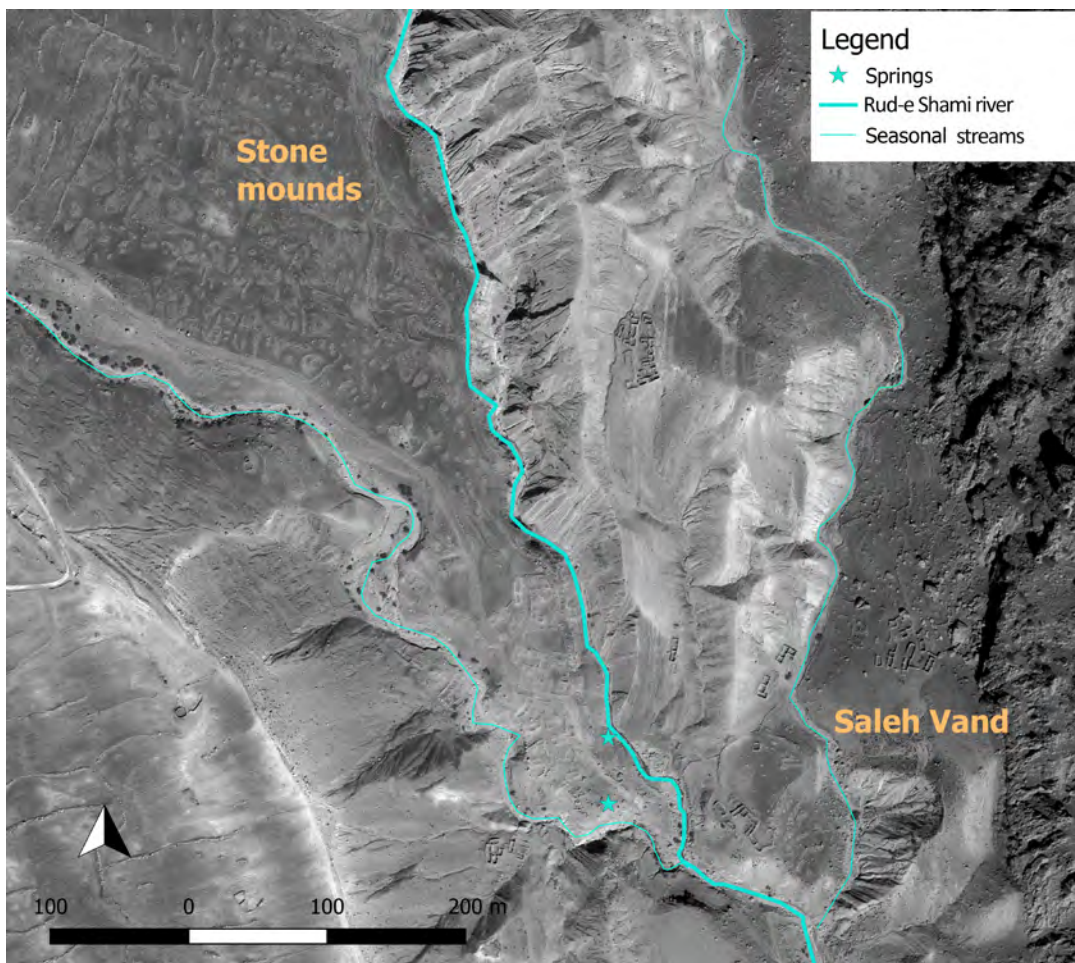


Figure 5.30 - Shami Valley, area of Saleh Vand. High-resolution satellite image GeoEye (©Digital Globe). Gaussian image enhancement (elaboration by the author)



Figure 5.31 - Shami Valley, area of Saleh Vand: modern ruined buildings



Figure 5.32 - Shami Valley, area of Saleh Vand: ruined building



Figure 5.33 - Shami Valley, area of Saleh Vand: massive wall, perhaps a terracing wall



Figure 5.34 - Shami Valley, area of Saleh Vand: wall with boulders, perhaps part of the Stein “Cyclopean wall”



Figure 5.35 - Shami Valley, area of Saleh Vand: funerary stela of Islamic period



Figure 5.36 - Shami Valley, area of Saleh Vand: ruined buildings

excavation were never fully published, thus no further information is available on the settlement in order to understand its precise location and its eventual interrelation with other sites in the area.⁷⁶ An intensive survey carried out in 2008 and aimed at identifying the population of the plain in the prehistoric period registered 35 sites of different date.⁷⁷ So far only the sites dating back to the prehistoric period have been published: among them, two caves, located along the slopes of the eastern and western reliefs of Piyun, present also material possibly related to the Elymaean period.⁷⁸ Such an evidence suggests that the mountains of the area were frequented in the Hellenistic and Parthian periods, possibly for activities such as pastoralism or wood exploitation.

Moreover, a visit carried out by our expedition in February 2009 revealed the presence of a large-sized mound near the modern village of Piyun. Here, along with some fragments of architectural materials, sherds probably dating back to the Elamite and the Parthian periods have been found. The Plain of Piyun is the closest flat area to the valley of Shami: its northern portion is about 7 km far from the site, while its southern part is about 15 km far as the crow flies. Thus, it is quite probable that the settlements dating to the Hellenistic and Parthian periods were somehow connected to the site of Kal-e Chendar. A simulation throughout LCPA⁷⁹ of the possible route linking the Shami valley to the mound identified, we located in the center of the plain, shows a path which is about 15 km long and that can be covered by foot in about 4 hours. While the route along the plain is almost flat, the path that crosses the Shami valley, characterized by several altitude variations, of about 300 meters, could be more difficult, as it is quite steep.

The plain of Izeh, located immediately to the south of the Piyun plain, is much wider than the first (about 124 km²). According to previous survey data, in the plain there are numerous settlements dating back to the Seleucid and Parthian periods: among them a large center, Choga Kal, as well as some possibly fortified structures, were identified.⁸⁰ Further testimonies are represented by the Hung-e Azhdar open-air sanctuary and by the rock reliefs of Hung-e Kamalvand and Hung-e Yar-e 'Alivand.⁸¹ The relevance of the area seems to be such that it has been proposed by some scholars that here the residence of the first rulers of Elymais should be located.⁸² The Izeh plain is about 30 km far from the Shami valley as the crow flies: an approximation of the time needed to cover such a distance varies from almost one day to one day and half by foot; thus, contacts between the two areas were probably more reduced than the Piyun area. For example, the simulated route that links Shami to the settlement of Choga Kal, in the northern part of the plain of Izeh, is about 28 km long, while the relative walking distance is about 8 hours. Similarly, to the path simulated for the Piyun plain, the whole route is almost flat and becomes steeper only in correspondence of the valley of Shami.

To the east, along the banks of the river Karun, there is the small plain of Susan, about 20 km² wide. Scattered findings testify to the presence in the plain of ancient remains. Klaus Schippman in 1968

⁷⁶ Godard 1962, 179-180.

⁷⁷ Jayez et al. 2019.

⁷⁸ Sites P12 and P26 (Jayez et al. 2019, tab. 3). Other 16 sites attest to the presence of settlements only in the post-Neolithic periods, but the data are currently unpublished.

⁷⁹ The Least Cost Path Analysis, or LCPA, is a distance analysis tool usually performed in a GIS environment. Such a tool uses the least cost path or the path between two locations that costs the least to those travelling along it to determine the most cost-effective route between a source and destination. For LCPA elaboration open-source software suit GRASS (Geographic Resources Analysis Support System) has been used. A digital surface model with a 30 m resolution (DSM ALOS WORLD 3D ©JAXA) has constituted the base for the construction of the friction or cost map; the cost map was elaborated considering the natural factors of the area that could influence the speed of movement: permanent rivers, seasonal streams or watercourses, seasonal lakes and slope; the so-called knights move was used. Two different friction maps were elaborated taking into consideration the winter/spring season and the summer season, as the amount of water of river and streams in the region changes during the year. On the different factors that should be considered for the creation of an archaeological friction map for example: Forte 2002, 110; Wheatley, Gillings 2002, 154-157; Connolly, Lake 2006, 215-216; Chapman 2009, 107-108; Herzog 2014, 230-235. The simulation of the time of travel was elaborated for the movement by foot. The walking time has been calculated using the open-source web platform Outdooractive (<https://www.outdooractive.com>), dedicated to hiking. The author wishes to thank Ezio and Sandro Micheli (CAI - Club Alpino Italiano) for their kind help in estimating the walking time.

⁸⁰ On the survey in the Izeh plain see: Egbal 1979; Faraji et al. 2015; Messina, Mehr Kian 2019a.

⁸¹ On the Hung-e Azhdar sanctuary see: Messina 2015 (ed.). On the relief of Yar-e 'Alivand see: Hinz 1963, 169-170; Vanden Berghe, Schippmann 1985, 39-41; Kawami 1987, 126-128, 214-215; Mathiesen 1992, 123-124; Messina, Mehr Kian 2011; Moriggi 2011; Messina, Mehr Kian 2015; Salaris 2017, 221-225. On the relief of Kamalvand see: Hinz 1963, 170-173; Vanden Berghe, Schippmann 1985, 42-45; Kawami 1987, 128, 177-178; Mathiesen 1992, 121-122; Messina, Mehr Kian 2011; Salaris 2017, 225-228.

⁸² Rahbar 1999, 91.

found near the village of Tisiyun a Parthian stele, the so-called stele of Ab-e Atabeq,⁸³ and noted the presence of three mounds as well as of some tombs.⁸⁴ Even if sherds scattered on the ground point to the Islamic period, this site should be further investigated in order to understand if the stela constitutes the only attestation related to the Parthian period or if there are other testimonies. In any case, two rock-cut chambers, one of which shows a Parthian relief,⁸⁵ attest to the frequentation of the area during the Arsacid period. Moreover, on the eastern side of the Karun, two rock-cut tombs carved into an isolated boulder are known.⁸⁶ The plain is only 10-15 km far from Kal-e Chendar but it is separated from it by mountain ranges. Indeed, the variations in altitude makes the journey from one location to the other quite difficult: for example, the simulated pathway between Shami and the site of Tisiyun, located in the north-western part of the plain, is about 15 km long, shows a difference in altitude between 600 to 800 m, while the calculated walking time is about 5 hours.

To the north, immediately after the Shami valley, there is the valley of Deli, a long and wide synclinal valley which ends in correspondence of the river Karun. The southern and northern banks of the watercourse are characterized by gently hilly and plain areas, about 17 km² (Iveh area) and 60 km² (Dasht-e Gol area) wide and about 17-27 km far from the site of Kal-e Chendar as the crow flies. This zone was settled in the Hellenistic and Parthian periods according to a survey conducted by Wright. In the Iveh area, i.e. near the southern shore of the Karun, four sites of modest size dating back between the Seleucid and Parthian periods, and one site whose ceramics are dated to the Parthian and Sasanian periods, have been identified.⁸⁷

Further archaeological sites of modest size are distributed along the opposite bank of the river, in the area of Dasht-e Gol: one of them has ceramics of the Seleucid or Parthian periods, while the other three dates back, according to the surveyors, to the Parthian or Sasanian periods.⁸⁸ The remains of a bridge presumably from the Sasanian age have been found in the same area:⁸⁹ there is no evidence of the presence of a similar structure in the Hellenistic and Parthian ages, but the location of the sites suggests that at least some type of passage-ways already existed. A simulation throughout LCPA suggests that the routes linking the shores of the Karun to Shami could pass both through the valley of Deli or across the Takht-e Kash mountain plateau, near to the eastern side of the Sisambouli chain; roads following the same route are documented in modern maps of the area, such as a soviet topographic map.⁹⁰ The simulated routes are about 18-22 km long, and can be covered by foot in at least 5-6 hours. Even if both trails involve a change of altitude between 600-700 metres, they do not show high steep variations, as the altimetry remains quite regular during the whole route.

The picture obtained from survey data on the regional scale seems to indicate that Kal-e Chendar was in an area with a complex pattern of settlements. No traces of a village were found near the site: however, the remote sensing analysis and the recent survey data from the valley of Shami suggest the possibility –to be confirmed by further investigation– that the site was not completely isolated. Nevertheless, it seems difficult to relate the relevance of the site as testified by the archaeological findings with the location of Kal-e Chendar in an area with a low soil exploitation potential such as the valley of Shami, especially when the nearby plains of Izeh, Piyun and Susan are taken into consideration. Indeed, these have a high land use potential, particularly as regards the agricultural production, and attest to the presence of several settlements of different sizes and type. Among them there are also large-sized centers, such as the one of Choga Kal in the Izeh plain, that could be perhaps

⁸³ On the stela see: Kawami 1987, 187-188, cat. no. 29, pl. 34; de Waele 1982, 40-42, fig. 2, pl. V; Mathiesen 1992, 150-151, cat. no. 24; Mehr Kian 2006, 614-617.

⁸⁴ On the site see: Schippmann 1970, 233-234; 1971, 221-225; de Waele 1982; Mehr Kian 2006, 614-617; Salaris 2017, 231-233.

⁸⁵ Farjamirad 2015, 21-23, 214, fig. 28; 2016, 135.

⁸⁶ Stein 1940, 139; Mehr Kian 2006, 614; Farjamirad 2015, 396.

⁸⁷ The sites are: Qaleh Atabeqi Qaleh or IV 7 (no. 8650/5767), Qabrstan Pir Halak or IV 5 (no. 8643/5769), Qabrstan Mazaran or IV 8 (no. 8652/5767), Qaleh Sorx or IV 11 (no. 8632/5760), and Zamin Sarab or IV 3/IV 10 (nos 8637/5766 e 8638 /5766) (Wright, Yaghma'i 1979, 21-28, 30-32, fig. 8).

⁸⁸ The sites are: Sar Qaleh Tali, or DG1 (no. 8641/5732), Čal-e Gap or DG10 (no. 8657/5731) and DG12 (no. 8760/5683) (Wright, Kossary 1979, 6, 16-18, fig. 5 upper; Wright, Yaghma'i 1979, 31).

⁸⁹ Wright, Yaghma'i 1979, 20; Hansman 1973, 46.

⁹⁰ Soviet topographic map produced by the General Staff of the Soviet Army (VTU), maps series SK 42, scale 1:200,000, sheet I-39-XXXVI (1972) (code name: Д-80-IX 72-Н) (©General Staff of the Soviet Army) (source: mapstore.com).

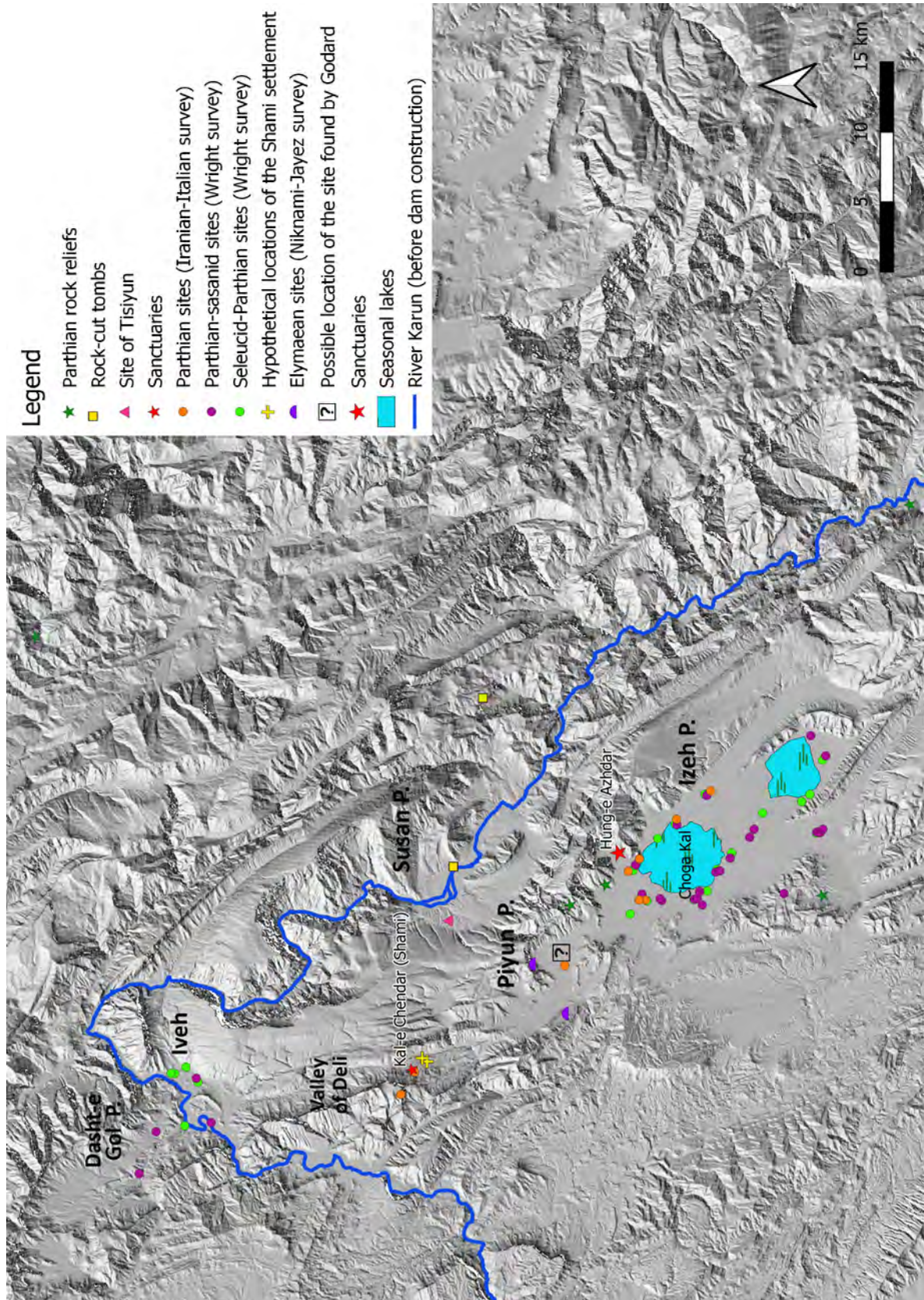


Figure 5.37 - The settlement pattern in the Seleucid and Parthian periods in the area of Izeh. ALOS WORLD 3D, 30 m resolution (©JAXA) (elaboration by the author)

related to the wealthy élite which seem to have frequented the sanctuary and the cemetery of Kal-e Chendar.

Considering the sanctuary, it is possible that the worshippers came not only from the nearby, but also from large-sized settlements as well as small villages in the surrounding areas of Iveh, Dasht-e Gol, Izeh and Susan, located at a distance from the site between few hours to one day and a half by walking.⁹¹ It seems plausible, on the other hand, that the cemetery of Kal-e Chendar was used in prevalence by people of settlements not too far. Indeed, it was not so convenient to reach the necropolis of Kal-e Chendar from the areas of Piyun, Izeh, Susan, Dasht-e Gol and Iveh, as the route was or too much long, or too much steep, while, in the main time, closer funerary areas were presumably available, as attested in the plains of Susan and Piyun. However, in the light of the high social milieu attested by the findings from the tombs of Kal-e Chendar, the possibility that wealthy elites engaged in less convenient trips in order to leave their relatives specifically in the necropolis must be seriously taken into consideration.

⁹¹ On the possibility that the site of Kal-e Chendar constituted a focal point for visitors coming from different centres in the region see also: Messina 2015, 200; Messina, Mehr Kian 2018, 299, 301.

Chapter 6

Excavation at Kal-e Chendar

Yalireza Baqherian, Ilaria Bucci, Alessandra Cellerino, Mehdi Faraji,
Enrico Foietta, Francesca Giusto, Morteza Homayoon, Jafar Mehr Kian,
Vito Messina, Mana Rohuani Rankouhi

6.1 General remarks (J. Mehr Kian, V. Messina)

Excavation has been conducted at Kal-e Chendar during three seasons in 2013, 2014, and 2015, corresponding to the 6th, 7th, and 8th campaigns of our joint expedition respectively.¹ Almost all operations were carried out jointly, except for fieldwork conducted by the Iranian team independently and beyond the common schedule, as specifically indicated below. Preliminary reports on ongoing fieldwork have been made available yearly.²

Information on the site, available thanks to the explorations carried out prior to our research, is enough affordable to say that an important sanctuary existed at Kal-e Chendar at least in the Hellenistic and Parthian periods. Survey conducted on the site in 2012 (our 5th campaign) allowed us to understand that the religious function, although of utter importance, was not the only characteristic of this ancient complex: we could identify five monumental terraces –the Upper Terrace, Terrace 2, Terrace 3, the North Terrace and Terrace 4– as the most interesting features of the complex, along with a wide cemetery apparently extending over the entire surveyed area. Indeed, the complex discovered at Kal-e Chendar appears to have been of a particular type: at least since a given moment (but we cannot exclude since the beginnings), a monumental cemetery, of which only few tombs have been recognized, extended for many hectares (probably about 50) on the areas surrounding the terraces, thus implying that religious and funerary functions were here strictly interrelated.

To investigate the most relevant scientific issues so far emphasized but also to match other needs (see below) we defined a strategy that particularly aimed at opening excavation trenches on, or around, some of the terraces recognized. The presumption to have located quite confidently on the Upper Terrace the place where investigation was already conducted decades ago, particularly by Stein and Karimi, induced us to start from this area and then to move to other points. As we will soon see, such a presumption seems corroborated by the fact that data acquired during our fieldwork and data published by Stein can be combined quite well.

One of the pieces of evidence of our research is that concerning the use of roughly cut undressed stones as the most diffused building material for the foundations and (supposedly) for most of the overground masonry of the edifices once standing on the terraces. Undressed stones can be found everywhere at the site, especially in the walls of modern houses (Fig. 2.7) as they have been continuously reused until the present day. It is worthy of note that baked brick fragments also occur as surface records, although less frequently and apparently only in the areas where the presence of religious buildings can be proposed on a sound basis. In the cemetery, the use of baked bricks appears rather sporadic. The continuous reuse of building materials deeply hindered the preservation of overground ruins.

Basing on the results of our excavations, the existence of different types of structures can be postulated for the period in which the sanctuary was in use: along with buildings largely made of undressed stones (also displaying some features made of baked bricks) and constructed on stone foundations, which had been erected only on the terraces as far as one can see, also smaller structures existed that

¹ The first four campaigns were carried out at Hung-e Azhdar, north of the Izeh plain (Messina (ed.) 2015).

² On the preliminary results of joint fieldwork, see Baqherian et al. 2016; Bucci et al. 2017; 2018.

were arguably made for religious purposes, and appear to have been scattered in different points, also in the cemeterial area. Almost nothing can be said of the buildings once existing at Kal-e Chendar, as we will see below. The smaller structures so far unearthed are stepped platforms (likely built to support altars) or monumental funerary platforms that could have had a celebrative function. The tombs are for the most semi-underground structures built to leave their façades, characterized by a monumental setting, well visible from the outside, as they were part of funerary complexes accessible time by time to users and visitors, and thus clearly perceptible.

We didn't discover major buildings preserved above their foundation level. The general setting of the site, characterized by the presence of monumental terraces that offered extended surfaces largely unencumbered by edifices, and were thus probably used to gather people in outdoor spaces, finds clear comparison with trends locally developed, well attested in other famous terraced sanctuaries of the region. However, the small religious structures and the tombs we excavated are vestiges of an architecture that appears balanced between the need to integrate built environments in the valley's natural landscape and the propension to a monumentality evidently influenced by global trends, as the comparison with funerary contexts of Mesopotamia, Syria, and the Levant attests quite evidently. The international ambition of the people once frequenting the sanctuary and the cemetery is likewise witnessed by what remains of the funerary goods discovered in the tombs (often residual of assemblages heavily looted, it must be said). The cemetery was not only a place to entomb the deceased: it was frequented also to perform funerary rituals in front of the tombs' façades or on the platforms there built. This is worthy of attention and demands further studies on the funerary practices of Elymais in the centuries that immediately precede and follow the Christian era.

Despite the scanty findings of our excavations and the uneasy task to define an affordable chronology, the structures unearthed can be dated to the Hellenistic and Parthian periods quite confidently. No evidence was discovered of occupations that pre-date these periods: in the trenches excavated down to a certain depth the foundation level of the structures once built at the site have been laid on natural



Figure 6.1 - Kal-e Chendar. View of the debris fan and the Bilevah Mountain (in the background) from the east



Figure 6.2 - Kal-e Chendar. Aerial photo of the debris fan taken from UAV

deposits lacking archaeological records. However, the possibility that the site was known, and in some way frequented, even before the periods so far documented cannot be ruled out. In Elymais the frequentation of sites having attained particular significance –in this case religious and funerary– is usually attested over a long timespan, far before their use in later periods. Human frequentation in the area is attested since prehistoric times, as revealed by the wide occurrence, especially on surface, of lithic objects (particularly microblades).

The religious buildings and other cult installations of the sanctuary were heavily destroyed in a moment that one is inclined to date after the Parthian age. The cemetery was repeatedly plundered after the destruction and abandonment of the site. Both these actions are evidenced by our excavations and especially the heavy destruction of religious buildings is corroborated by data previously acquired, namely the finding of smashed bronze and stone statues originally dedicated on the Upper Terrace. However, we could likewise find traces of sporadic reoccupation of some areas of the complex, mostly corresponding to the cemetery, in periods that followed, arguably after a while, the destruction and abandonment: during these squatting occupations (almost impossible to date), some of the ancient tombs could have been reused as storage places in domestic contexts characterized by precarious architectures. Squatting settlers were probably the first to start the process of continuous reuse of building materials already mentioned. To sporadic resettlements and continuous pillaging can be probably connected the almost total lack of human remains in the surveyed and excavated tombs. This is indeed one of the challenging problems evidenced, among many others, by our excavation: it seems that the tombs we excavated were made empty of human bones for some reason at a given moment. However, it was impossible to understand whether this was the consequence of looting and squatting reuse of the cemeterial area or rather a funerary practice to make available space in tombs used for centuries likely by the same families. In the latter case, future excavations will arguably allow archaeologists to find ossuaries in still unexplored areas of the site.

6.2 Excavation aim and strategy (J. Mehr Kian, V. Messina)

The area of Kal-e Chendar, as all the north part of the Shami valley, is characterized by the presence of debris fans of colluvial origin, originated from landslides or from the repeated collapse over time, and since prehistoric eras, of stone materials from the Bilevah mountain. The largest part of the archaeological site so far recognized overlaps the greatest of these fans (Figs 6.1-6.2). Thus, the ground morphology, due to the orogenesis of the valley and surrounding mountain systems, characterized by the presence of calcareous lithosols, shallow soils or orthents, does not facilitate the comprehension of archaeological stratigraphy –as our excavations showed unmistakably– because soils and archaeological strata lay on sloping bedrocks. The soil, a lithosol consisting of partially weathered rock fragments, is everywhere mixed with rubble of different sizes, pebble, and other debris, which are the result of landslips and of the progressive decay of the stones and boulders that can be found everywhere in the valley. The abundance of these decayed materials makes the detection and understanding of anthrosols and archaeological strata extremely difficult. On bedrocks or on grounds characterized by lithosols, such as colluvial fans, anthrosols almost completely disappear because of landslide. The collection of surface material is likewise very problematic for the same reason.

However, the main problem for the definition of archaeological sequences is created by the low stratigraphic accumulation, characteristic of mountainous sites and worsened by repeated human interventions. Landslips and human activity did not allow the progressive deposit of layers and architectural remains as it happens in other contexts, such as in alluvial plains. Unlike in settlements located in alluvia, largely built of mudbrick, and thus preserved until present day as overground mounds (called tell or tepe), in mountainous environments, building materials, namely stones, are continuously reused; this hindered archaeological stratification because the most recent building intervention obliterated the traces of preceding activities almost completely as a rule. Such a process is well attested at Kal-e Chendar. As we could see in the excavated areas, no more than 2 m (often less) usually separate the topsoil from the bedrock or from layers of natural deposits and stone debris lacking archaeological records. Stratigraphy is thus extremely compressed in favour of the more recent phase of occupation, with materials of different dates, as a rule very scanty, incoherently mixed in the same disturbed layers.

For the same reason, foundation ditches can be clearly seen only when they are the result of very recent activities and are on –or very close to– the surface, such in the case of modern unauthorized trenches excavated by looters (which we recognized in different points of the site). In the end, the visibility of archaeological remains is very low: structures have very shallow foundations, if any, and are built of undressed stones. This means that not only overground ruins, but even foundations or foundation ditches are sometimes barely distinguishable beneath the surface.

The continuous reuse of ancient cut stones over time, also in the construction of very recent buildings, made the preservation of ancient structures (even in ruin) almost impossible. To this, it must be also added that the well-known presence of archaeological vestiges (especially tombs) encouraged looting: unauthorized activities probably started soon after the abandonment of the site in antiquity, but they seem to have had a progressive increase since the accidental finding by local dwellers, in 1935, of the amazing bronze statues now in the National Museum of Iran. In such a context, the aim of regular excavations is thus to clear the foundation of supposedly ancient buildings and to retrieve archaeological materials that are always residual, because of the low stratigraphic accumulation or because they are the remnants of looted contexts, being aware that the possibility of finding structures preserved above the foundation level, clusters of affordable records and assemblages of surface materials or untouched funerary sets is frustratingly low. For instance, we found structures preserved above their foundation level in one trench only, we didn't find untouched tombs, we couldn't collect surface material statistically relevant; we found only scanty stratified material. As for the latter, one must consider that more than 50% of the potsherds found was recovered from tombs –almost all the occurrences from one tomb only (see below, T23)–; the remaining part was in strata or from surface, often incoherently distributed; only half of the potsherds found is diagnostic (better said, barely

diagnostic). Therefore, along with the difficult interpretation of structures, chronology is hard to define precisely.

The discovery of ancient foundations can give indication on the presence and overall size of the buildings once standing over the ground, however any additional information on their layout and architectural features is nothing but fortuitous. Tombs can be unencumbered by the debris of their collapsed roofs or walls to recover what has been left by looters of the funerary sets originally placed in their chambers: the finding of untouched tombs would be, alas, likewise fortuitous. The only strategy to enhance the comprehension of such an archaeological context would be that of extensive excavations purposing to unearth foundations and understand their interrelation with the residual materials eventually found, paying great attention to the compressed stratigraphy of the site. Such a strategy is often hindered by circumstances, however. Agricultural fields, which are privately owned, extend over the whole archaeological area, and inhibit extensive ground operations: archaeological fieldwork is indeed a very unwelcomed activity, and field owners hardly agree to open stratigraphic trenches on their estate. Only trenches of limited extension and duration have been allowed by landowners during our research.

This situation influenced the definition of our strategy deeply, as we could negotiate the opening of trenches in some points, but these points not always (or not completely) coincided with the areas that raised our interest; in addition, we could only schedule our work ephemerally, as it was impossible to guarantee the continuation of fieldwork in a given point from one year to another. This led to a fragmentation of the excavated areas that was the result of a balance between scientific needs and negotiation processes (not always with positive outcomes): in three campaigns, we opened 18 trenches spotted in distant areas of the site to investigate (at least in part) some of the points we deemed worthy of attention.³ Also, to allow the cultivation of the fields we excavated and to protect the structures eventually found, we had to cover yearly, at the end of each season, the trenches we opened. For this reason, our trenches, with only few exceptions, have been covered with soil after excavation: out of 18 trenches, five were left uncovered at the decision of the Iranian counterpart (Trenches 6, 10, 13, 14 and 15).

6.3 The Upper Terrace (V. Messina)

The Upper Terrace (or Stein-Karimi Terrace) is the most impressive monumental structure recognized at the site (Figs 2,5, 4.2, 6.3-6.5).⁴ Our survey allowed us to identify the terrace as the place where the well-known bronze statues now in Tehran were found, and as the area of the excavations conducted by Nā'ib Dīn 'Alī Khan Tabrīzī (soon after the discovery in 1935) and by Stein and Karimi (few months later, in 1936).⁵ Further data, progressively acquired during our research, seem to corroborate our identification as they combine with the records published by Stein.

The terrace has a roughly square perimeter, and it overlooks the south stream from the north. It is in turn overlooked from the south by Qal'eh-ye Vali, one of the two small fortresses identified at the site and built on the top of a hillock (Figs 5.21, 6.6-6.7). The terrace's extension, formerly estimated between 4,600 and 6,000 m², has been reassessed in about 8,000 m² further to our excavations: two of the trenches opened at the terrace's limits allowed us to recognize small portions of the southeast corner (Trench 2) and north retaining wall (Trench 4).

The most remarkable and visible architectural feature of the terrace is its south retaining wall (Figs 6.8-6.9). This is more than 90 m long and up to 3 m high in the points of maximum height. The wall's façade, once looking the streambed close to a spring (Fig. 6.10) still well recognizable about 30 m to the south (Spring 1), has collapsed in ancient times, or was more probably dismantled to retrieve useful building materials, as it may be assumed that it embodied well-cut and polished stone blocks.

³ It may happen that trenches opened in the same areas don't follow a progressive order.

⁴ This has been already described by Messina 2018, 168; Messina, Mehr Kian 2018, 299-301.

⁵ See chapter 1 for information on both issues.



Figure 6.3 - The Upper Terrace seen from Qal'eh-ye Vali



Figure 6.4 - The Upper Terrace. Aerial photo taken from UAV



Figure 6.5 - The Upper Terrace. Aerial photo taken from UAV. Detail of the southeast corner



Figure 6.6 - Qal'eh-ye Vali from the west

However, it is possible to see that the wall texture is made, in its lower part, by a course of irregular boulders, onto which more regular stones, of smaller size, have been arranged on parallel rows. As attested also in other monumental structures discovered at the site (Terrace 3, the North Terrace and Terrace 4), such a wall was built to retain a filling of soil and rubble that allowed builders to regularize and flatten the terrace's top surface as much as possible. It is on this regularized surface that ancient buildings now lost originally stood, as revealed by excavations.

The pillaging of the stone blocks once arranged in the wall's façade facilitated the collapse of both the masonry and filling in some points, particularly at the terrace's southwest corner: here a debris' slide that makes the wall's contour slightly curved and sloping downward is clearly visible (Fig. 6.11). Such a collapse-conformation can be also seen in another monumental terrace, the one we surveyed at Qal'e-ye Bardi, an important and still almost unexplored Elymaean religious complex: there, one of the terrace's retaining walls has decayed in a way that is very similar to that observed on the Upper Terrace of Kal-e Chendar. It is extremely interesting that at Qal'e-ye Bardi the collapsed part of the retaining wall surely embodied a grand stairway giving access to the terrace's top.⁶ Basing on this evidence, it may be postulated that a stairway could have been embodied also in the Upper Terrace's south retaining wall, close to the southwest corner. There are no other noticeable traces of stairways, but the possibility that a structure of this type could have been embodied also in the terrace's east wall –the one looking toward the cemetery and rising on the sloping part of the colluvial fan– must not be ruled out. The south and east retaining walls are indeed the two approach sides to the Upper Terrace and could have both embodied access stairways: other known cult terraces embody more than one stairway in their approach sides.⁷ Be that as it may, one may say that, unlike the terraces of Majid-e Sulayman and Bard-e Neshandeh, the retaining walls of the Upper Terrace hardly appear to have been buttressed.

The fact that the south retaining wall is ancient –although its upper part must have been repeatedly repaired, also in very recent times– is confirmed by the relation it has with the artefacts and structures unearthed, in 1935-36 and more recently, on the terrace's top. Indeed, the wall retains the same filling into which the statues were found, and the foundations of ancient structures were laid. The wall is thus more ancient than the findings in relative chronology. The other retaining walls of the Upper Terrace are more difficult to detect, except for the east wall, whose remaining part can be clearly seen at the terrace southeast corner, where it joins the south wall (Fig. 6.9). In this area, where both the east and south walls have been used as substructures for a modern house, squared and rounded ancient column bases have been recognized along with other ancient stone blocks of masonry (Fig. 2.6). Many of these blocks had been reused in the walls of modern structures. Further rounded column drums were found loose on surface, while statue bases and plinths –worthy of mention as we will see– were recognized in the walls delimiting a modern storage place close to the house built on the terrace (Figs 6.12-6.14). The latter findings are particularly important as they confirm that ancient building(s) now completely lost stood in this area or nearby.

The buildings and other structures on the Upper Terrace must have been of utter importance, given that bronze statues and statuettes had been there dedicated in what can be deemed as a religious complex. The finding of statues, especially those larger than life-size, clearly points to a high reputed temple or sanctuary for such a dedication. Statues were found broken into pieces, as they had been deliberately smashed in antiquity. As is well known, the most outstanding piece, variously dated between the 2nd century BCE and the 2nd century CE (but likely cast right at the turn of the Christian era),⁸ was lacking its right arm and parts of the body: it portrays the famous Parthian nobleman now displayed in the National Museum of Iran. A further statue, arguably life-size, has been recently

⁶ Messina 2018, 172, 177.

⁷ The terraces at Majid-e Sulayman and Qal'e-ye Bardi embody each a grand stairway and smaller stairways in their approach sides: in the first case, the grand stairway is embodied in the terrace's east approach side and small stairways are embodied in the north side (Ghirshman 1976, planche III); in the second case, the grand stairway is embodied in the south-west approach side and small stairways in the north-east side (Messina 2018, fig. 4).

⁸ See for all Stein 1940, 141-159; Kawami 1987, no. 8, pl. 11; Mathiesen 1992, 166-167, no. 80. See the latter for the discussion on the statue's chronology.

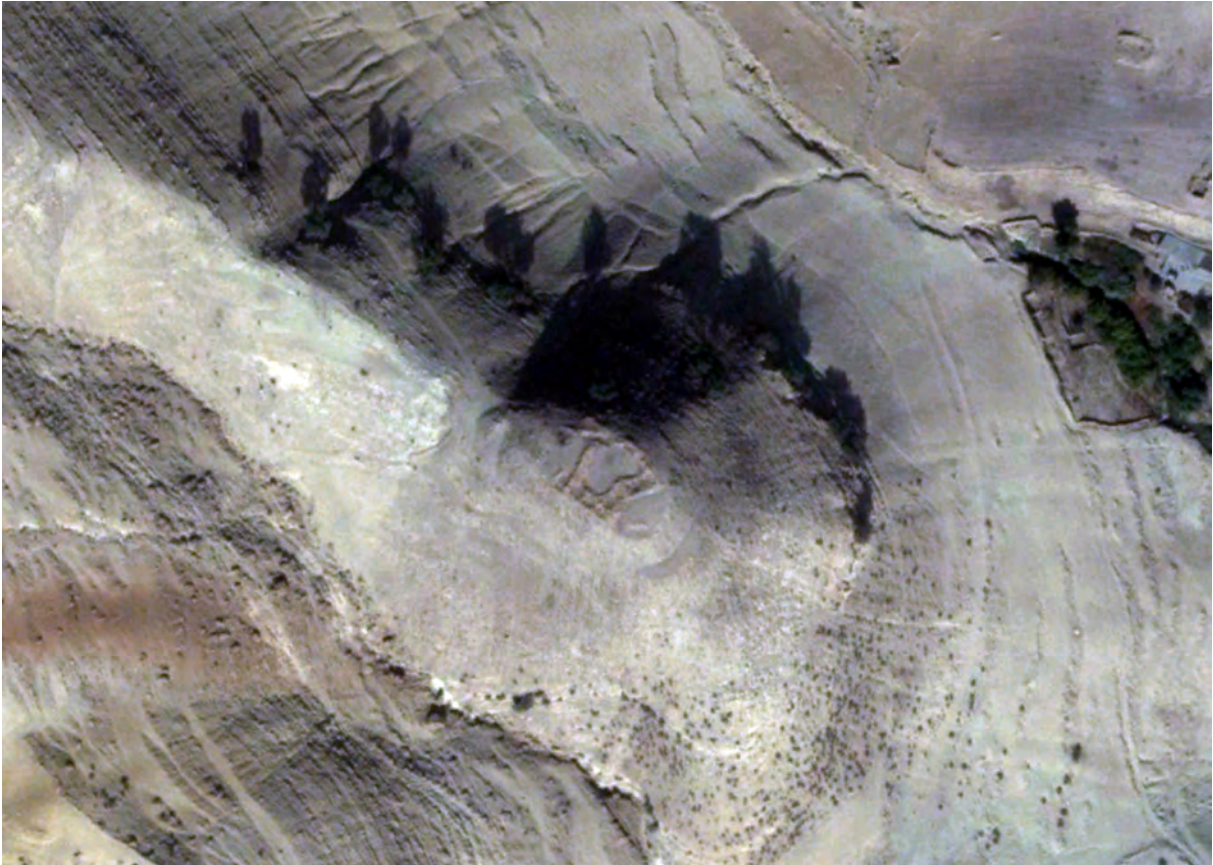


Figure 6.7 - Qal'eh-ye Vali. Aerial photo taken from UAV



Figure 6.8 - Upper Terrace. South retaining wall from the south



Figure 6.9 - Upper Terrace. South retaining wall. Detail of the southeast corner

reconstructed basing on some underestimated or yet unexamined bronze fragments likewise kept in the National Museum.⁹ The statue reproduces a nude heroized ruler holding a spear, and it derives from a prototype attributed to Lysippus, known as ‘Alexandre à la lance’. It almost surely does not portray Alexander, however. Of the latter statue only parts of the face, the left arm and two fragments of the right arm and left leg have been recovered. The face is so damaged that it is impossible to identify the portrayed ruler: identifications of Seleucid or Kamnaskirid dynasts have been proposed but none of them has found real consensus.¹⁰ This said, one can deem quite confidently that this is a piece reminiscent of the Hellenistic tradition, cast in the 2nd-1st century BCE; in addition, the fact that a royal statue was there dedicated confirms the importance and prestige once attached to the place.

Such a prestige doesn’t seem to have been attached to architecture. The relevance of the sculptures and objects found on the Upper Terrace does not seem to match the relevance of the buildings formerly standing on its top, as far as their size and layout can be devised. Basing on the data available, it may be supposed that the buildings on the terrace were of relatively small size and that they had a simple layout: they surely appear to have been undersized if compared to the extension of the terrace onto which they stood. This is not surprising, as a similar disproportion between built and unbuilt spaces can be observed also on other sacred terraces of Elymais, but it surely demands a thorough consideration when trying to assess the relevance and use of built spaces in Elymaean religious complexes.

Up to the beginning of our fieldwork, the only ruins mentioned in scientific literature were those discovered by Stein and Karimi.¹¹ The two scholars started research in the place where the statues had been discovered, a place already marked by a 6 × 8 m trench when they reached the site in 1936 (Fig.

⁹ On the statue’s fragments see for all Stein 1940, 151; Kawami 1987, 28; Mathiesen 1992, 88-89; on the more recent studies, new reconstruction, and updated bibliography, see Lindström 2017; 2019; 2021; see also Canepa 2015b 83-93.

¹⁰ See for all Lindström 2017, 184, and the discussion in chapter 12.

¹¹ Stein 1938, 325; 1940, 141-159.



Figure 6.10 - A spring (Spring 1) at the feet of the Upper Terrace's south retaining wall



Figure 6.11 - Upper Terrace. South retaining wall from the south (detail of the wall contour close to the southwest corner)



Figure 6.12 - Upper Terrace. Stone statue base or plinth in the wall of a storage place probably overlapping Nā'ib's trench

1.4): such a trench, opened by Nā'ib Dīn 'Ali Khan Tabrīzi, was an enlargement of the narrow ditch originally excavated by dwellers to lay the foundations of a modern house. Given the exceptional discovery –Stein was said– excavation was stopped in that point until the coming of Nā'ib, and new ditches for the house's foundations were dug nearby. Nā'ib could found other bronze and marble fragments of sculptures, smaller or far smaller than the others.

On the site, Stein could survey the remains of decayed walls in undressed stones, meant to support cultivation terraces in his opinion: it may be supposed that, among the many modern walls of this type visible at the site even today, he also observed the Upper Terrace's south and east retaining walls, although he didn't mention the presence of the terrace itself. Nā'ib's trench was cleared and enlarged by Stein and Karimi: the stone foundations of a small rectangular enclosure, roughly west-east oriented and measuring 12.5 × 23.5 m, were identified (Fig. 1.4). Indeed, the enclosure's layout and size seem to have been largely reconstructed by Stein, as no traces of masonry were detected, and the remains of stone foundations said to have been recognized appear less extended than the reconstructed perimeter.¹² Inside the supposed enclosure, a baked brickwork broken into three parts was found in the subsurface (Figs 1.5-1.6), along with stone bases and baked brick column fragments loose on surface. The brickwork, identified by Stein as a ruined base and the remnant of a floor, is probably what remains of a stepped platform (or altar) east-west oriented, as it may be supposed basing on the comparison with a structure brought to light in our Trench 3 (see below in this chapter). Given the position of Nā'ib's trench, Stein assumed that also the bronze statues were found inside

¹² Stein 1940, 145-147, pl. 11.



Figure 6.13 - Upper Terrace. Stone statue base or plinth in the wall of a storage place probably overlapping Nā'ib's trench



Figure 6.14 - Upper Terrace. Stone statue base or plinth in the wall of a storage place probably overlapping Nā'ib's trench

the enclosure whose existence he postulated. Outside of it, three further stone bases were recovered, which appeared to have been statue's plinths.¹³

Ashes and burnt wood were likewise found and interpreted as traces of a wooden roof's fire: according to Stein, such a roof only covered the perimetral parts of the enclosure (as a verandah-like structure), because burnt material could be exclusively found along the supposed walls' foundations. Thus, the enclosure could have been left open to the sky in its central part. The examination of published and unpublished pictures took by Stein allows an observer to verify that the area was excavated down to a depth of less more than 1 m from the topsoil (Fig. 1.7). Sculpture fragments and bronze statues were therefore discovered in the subsurface. Notwithstanding the unclear and incoherent context of finding, Stein assumed that the statues there found originally stood inside the enclosure, and that such a complex, given the presence of the statues themselves, of column bases and of a brickwork (arguably an altar, we add), should be interpreted as a shrine. The religious context is evident, the presence of a shrine exactly in that point is not.

The experience made during our excavation shows that it is extremely hard to detect the limits of a ditch and to recognize negative stratigraphic units because of the soil conformation: this is characterized, as already mentioned, by lithosols laying on the debris of a colluvial fan or on the natural bedrock. It is thus hardly understandable how a rectangular perimeter could have been recognized by Stein given the lack of stone materials in large parts of its foundation ditches. For the same reason, the limits of the trench opened by Stein and Karimi cannot be clearly seen on the terrace after more than 80 years. It is therefore difficult to locate finding spots precisely, as information available in the published report is not helpful.¹⁴ However, basing on the results of our research, at least the area of the trench, if not its limits, can be identified on the terrace quite confidently.

As anticipated before, we found stone blocks and bases in modern walls as reused materials. In the wall of a modern storage place close to the house built on the terrace we could recognize two of the bases found by Stein (Figs 6.12-6.13). The walls of such a storage place mark a perimeter that corresponds to the orientation and size of Nā'ib's trench (as it is shown on Stein's map) quite precisely, as if the storage place had been built, soon after the end of Stein and Karimi's work, in the place formerly selected by dwellers for the house's foundation ditch (see also chapter 4.3 on this issue). This is located at about 5 m from the terrace's east retaining wall, more or less at its midpoint along a north-south trajectory. If our identification is correct, the enclosure postulated by Stein, exceeding the limits of Nā'ib's trench both to the west and to the east, is in a very peripheral area of the terrace (Fig. 4.2) and its east short side is coincident with the limit of the terrace's wall – a circumstance that seems indeed quite improbable, because 1) the foundation ditch of the enclosure's short wall would have cut part of the terrace's retaining wall, and 2) a wall standing in that point would have obstructed one of the terrace's approach sides at its midpoint.

One may add to such a puzzling picture that the stone bases there recognized appear undersized for the bronze statues found, especially that of the Parthian nobleman. Also, there are more bases than statues found. The context is clearly that of a deliberate and heavy destruction of a dedicational complex, with statues smashed down and pieces completely lost (or still to be found): all further inference is questionable. A better evaluation of the data made available by Stein leads one to think that statues and bases (whether the latter supported the former or not) were not exactly found in the place of their original position: obviously, statues couldn't have stood too far from their finding spot, but they appear to have been displaced there from a nearby location. More logically, the context investigated by Stein and Karimi could have been that of an open area with scattered remains of smashed statues and a broken baked brick platform/altar east-west oriented. The stepped platform/

¹³ Stein 1940, 141-159.

¹⁴ The contour map of the site does not give precise indication (Stein 1940, 142, plan 10), neither do the unpublished photographs kept at the British Library (London) and the Bodleian Library (Oxford). On two published pictures (Stein 1940, figs 52-53), many elements of the landscape can be clearly recognised but they contribute to locate the spot of Stein and Karimi's excavation only approximately (see Messina, Mehr Kian 2014, 67-70, figs 2-3).

altar we found in our Trench 3 has the same characteristics: it is east-west oriented, and it is open to the sky. Where did the statues stand thence?

About 20 m west of the walled storage place likely corresponding to Nā'ib's trench, toward the terrace's centre, a very low mound was visible along with a stone assemblage and scanty baked brick fragments. This area raised our interest both for the central position it had on the terrace and for the residual surface material. Two trenches were there opened (Trenches 1 and 8) that allowed us to discover extensive remains of stone foundations. These are of two types: one is a kind of platform delimited by retaining walls, which could have allowed builders to use a regularized surface as the underground substructure of a building now completely lost; the other is the foundation of a thick wall. Both structures belong to the same complex, being only 10 m apart and running parallel. Their extension is unknown, as they have not been completely unearthed, but they show some propensity to monumentality: the buildings they once supported stood at the centre of the terrace and appear to have been perfectly aligned with its limits and equidistant from the two terrace's approach sides.

Given that nothing survived of overground structures, any attempt to envision the buildings' layout would be misleading. Basing on the observation of surface remains, one may only suppose that in such a built space both stone blocks and baked bricks were used. When looking at the proportion between stone and brick fragments it may be also proposed that bricks were selectively used for some architectural features, such as small platforms (altars) or columns, rather than for walls, but this remains speculative. Brick fragments found at the site allow the reconstruction of columns with a diameter of about 60 cm. Stone column bases or drums loose on surface are smaller, not exceeding 40 cm. Basing on these ratios one can deem that brick columns could have been used as architectural elements to support lintels (or entablatures?), although it is arduous to imagine colonnades or peristyles given the low occurrence of the records found, while stone drums and bases seem rather to be the remnants of semi-columns used as pedestals.¹⁵

Little more can be postulated on such a built space as far as layout, architectural phases and chronology are concerned (see below); however, the scanty data acquired seem enough coherent with the assumption that the terrace's most relevant buildings stood there. These buildings did not encumber the terrace for a wide extension probably, but they can be deemed of great importance regardless of their size, as they appear as a place more suitable than that proposed by Stein for a dedicational complex.¹⁶ It is a matter of speculation whether the statues accidentally found at the site were originally placed inside or outside the buildings on the terrace, but their location in a place more central than that supposed by Stein (which is too close to the terrace's limit) seems probable. Only after the statues had been smashed their pieces were scattered in the point where they were found, few meters afar from their dedicational position. Be that as it may, there can be little doubts that the buildings once existing on the Upper Terrace had been completely dismantled when the statues were smashed and when the sanctuary was arguably abandoned. Even considering the ancient stone blocks we were able to recognize as reused materials in the walls of modern houses (or still loose on surface) and the fragments of baked bricks, what remains of overground structures is less than residual. The almost total lack of ruins originated by the decay of ancient masonry leads to two considerations: 1) in this place ancient buildings were of relatively small size, and 2) the stones and baked bricks used in their masonry were almost totally pillaged or broken into pieces.¹⁷

The data we were able to retrieve can hardly allow us to propose an affordable chronology of the structures unearthed (see below). The scanty records in strata can be generally dated to the Parthian age; the statues there found point to a timespan dating from the 2nd century BCE to the

¹⁵ Along with life size or larger than-life size statues also fragments of statuettes have been found.

¹⁶ The two areas are close.

¹⁷ It cannot be excluded that the amount of ancient building materials available at the site and reused in the houses of the modern village was far huger than that we were able to recognize. Indeed, we recognized old stone blocks in modern walls' masonry only when they were intact, because their size and shape appeared different from the size and shape of what we deemed as stones more recently cut (smaller than the old ones and quite cubic). However, the possibility that cubic small stones were cut from ancient rectangular blocks cannot be ruled out. If so, ancient blocks cannot be detected anymore as they have been reduced into smaller pieces. This would explain the loss of any trace of overground buildings.

2nd century CE: this can be deemed as the period of use at the least. It is interesting that no traces of earlier occupation were found, except for lithic materials of prehistoric date. If corroborated by further investigations this would be a major information on the presumed period of the sanctuary's establishment or monumentalization, but it must be still considered hypothetical. More reliable, when considering Stein and Karimi's data and our data overall, is the impression of a low built environment on the Upper Terrace.¹⁸ The religious (and dedicational) complex on the terrace's top appears to have been characterized by built spaces of relatively small extension along with open-air small structures likewise usable for cult purposes (such as stepped altars).

The configuration of other cult terraces excavated in highland Elymais, at Majid-e Sulayman and Bard-e Neshandeh, is comparable to the one we envision on the Upper Terrace at Kal-e Chendar, if one accepts that in the latter two sanctuaries sculpted stone slabs or statues almost in-the-round of full Parthian date parallel the bronze statues found at Kal-e Chendar as votive remnants of dedicational contexts. At Majid-e Sulayman¹⁹ built spaces extend for about 1,500 m² over an area available on the system of terraces there identified of little less than 16,000 m²; at Bard-e Neshandeh less than 200 m² are covered by a pavilion-like structure on the upper terrace, which makes available about 6,000 m², while roughly 330 m² are encumbered by religious buildings on the lower terrace, extending for about 3,000 m² (the two terraces can be considered as a unit). The same can be proposed for cult terraces that have been surveyed but not yet excavated: on the terrace of Qal'e-ye Bardi,²⁰ clusters of decayed materials related to ancient buildings seem to extend less than 1,000 m² over a surface available of about 16,000 m². The disproportion between built and unbuilt spaces in favour of the latter seems thus a well verifiable trend: as a rule, no more than 10% of the terraces' surface is encumbered by built spaces. This suggests that built spaces on the Upper Terrace could have hardly exceeded 800 m².

Though less extended than other excavated or surveyed terraces,²¹ the Upper Terrace of Kal-e Chendar shares with the known examples a series of characteristics: a general conformation that implies reduced built spaces, a series of findings related to dedicational ambits, and the presence of cult installations. It also shows similarities with two of them (Bard-e Neshandeh and Qal'e-ye Bardi) for its topographical setting as it overlooks a streambed and is guarded by a small fortress built on a hillock.²² The concomitance of all these elements further corroborates the pre-eminence of the Upper Terrace in the context of the site.

6.3.1 Trenches 1 and 8 (I. Bucci, A. Cellerino, F. Giusto)

Trench 1

Trench 1 was opened roughly at the centre of the Upper Terrace. Our excavation was planned to better understand the layout and features of the complex and to evaluate the preservation of the archaeological layers. On the surface of the terrace in this point there were small and medium size rubble stones, few potsherds, baked brick fragments, and microliths. Trench 1 is in the area of a very low mound; south of it, a stone assemblage filled the remains of a small modern enclosure (SU11) –the upper part of the stone walls slightly emerged from the ground level– and contained some ancient architectural elements, namely square stone blocks and baked bricks. A trench initially measuring 4 × 4 m was widened up to 8 × 6 m at the end of our first campaign: we discovered a large retaining wall (SU4) extending beyond the trench limits. For this reason, further investigations to the north and south were carried out for an overall excavated area about 25 m long (Fig. 6.15).

¹⁸ Indeed, the same trend seems to be evidenced also by the results of our excavations in other points at the site.

¹⁹ Measurements for Majid-e Sulayman and Bard-e Neshandeh have been taken on the maps published by Ghirshman 1976, planches I and III.

²⁰ Messina 2018, 173-176.

²¹ It seems that, along with the sanctuaries mentioned here, three other terraced sanctuaries have been recently identified in the highlands of Elymais by Iranian surveys at Batvand, Sangar and Cafè Babak. These deserve further investigation however (Sardari Zarchi et al. 2014, 68-69, figs 7-9, pl. 4, 7).

²² The same happens also at Bard-e Neshandeh and Qal'e-ye Bardi. The presence of a streambed can be seen at Majid-e Sulayman, but no fortresses have been yet identified. For an overview of the known terraced sanctuaries, their landscape, and their shared characteristics, see Messina, Mehr Kian 2018, 301-303.

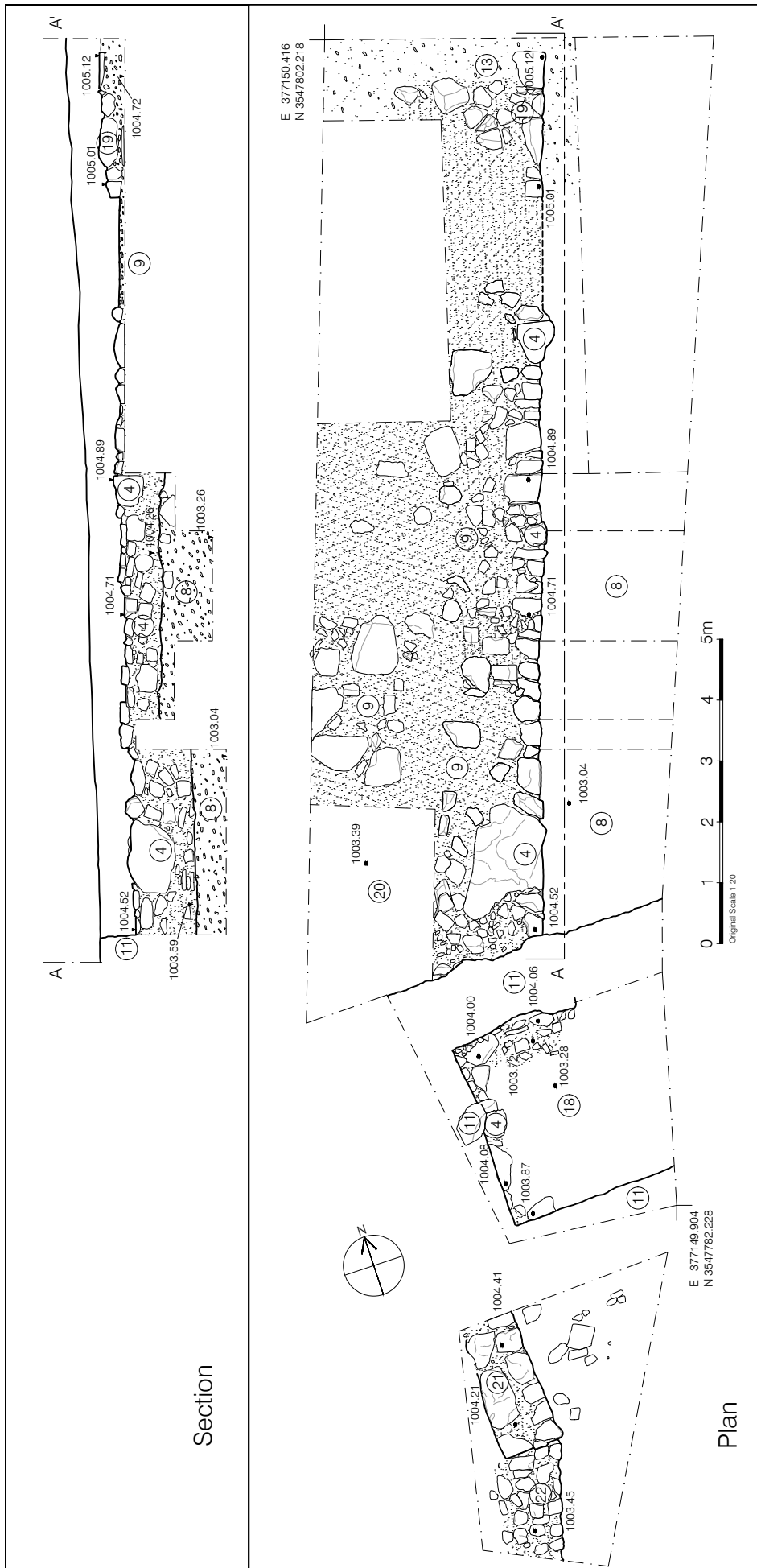


Figure 6.15 - Trench 1. Layout of the excavated area (scale 1:100)



Figure 6.16 - Trench 1 from the north during excavation

Under the surface (at an elevation of 1005.230 m asl in the middle of the trench), a layer of big stones (SU2) and two strata of agricultural soil (SU1 and SU3) were reached at a depth of 15 cm. These covered the remains of wall SU4, detected at about 30-40 cm from the modern surface. SU4, made of irregular undressed stones, is roughly north-south oriented. Its east façade is clearly outlined, as it is delimited by large and medium size stones, while to the west the wall is not well defined for it retains, with no clear interruption, a filling of loose earth and rubble (SU9) more than 3 m wide and extending beyond the west excavation limit (Fig. 6.16). Wall SU4 is up to 75-110 cm wide and, despite its irregular appearance, has a rather regular texture: this is composed by big and flat stones laid east-west alternating with small- and medium-sized stones and rare brick fragments arranged in two or three rows. A significant exception to this pattern is represented by the boulder immediately to the north of SU11, which was probably already in place before the beginning of building activities: given its dimensions –about 1.30 m in width– it is probable that it was included into the wall texture instead of being removed.

Wall SU 4 and filling SU9 seem thus to form a platform, whose original extension and function remain unclear. SU4 develops for at least 10 m: its surface was reached at an elevation of 1004.890 to 1004.520 m asl from north to south, while its foundations were laid at 1004.190 to 1003.590 m asl from north to south. To the north, the wall's east façade appears severely damaged at about 10 m from the north limit of SU11, having been either intentionally cut or simply deteriorated. After a gap of 1.8 m from this point, the remains of another wall (SU19) were found (Fig. 6.17); its top was reached at an elevation of 1005.120 m asl. If compared to SU4, wall SU19 is similarly built of medium and large undressed stones delimiting the east outline only. It is also aligned with SU4, a characteristic probably indicating that the two walls were originally part of the same structure. The latter possibility must be seriously taken



Figure 6.17 - Trench 1 from the north during excavation. In the foreground, detail of SU 19

into account, even if it must be also considered that without excavating the deepest part of their foundations in the place where SU4 is damaged, the fact that SU19 is a later wall aligned and laid on the remains of SU4 cannot be ascertained. It is likewise unclear whether SU19 extends further beyond the north and west limits of the trench or not; however, based on what has been excavated, this seems improbable.

In the central part of the trench, to the north of SU11, two deep soundings were excavated with the aim to understand the structure of the wall and to evaluate its state of preservation (see section A-A' in Fig. 6.15). Two strata leaning against the east façade of wall SU4 (SU6 and SU7) do not seem natural deposits, for the few potsherds and fragments of baked bricks they included rather allow us to consider them as layers of debris from a collapsed structure. SU7 contained many architectural materials whose position deserves more attention. Most of them were indeed lying flat or partially oblique on the wall, which might indicate that the upper row(s) of stones in this area were above the foundation level and that in front of SU7's façade there was an empty and approximately flat surface (Fig. 6.18): such a surface could have allowed architectural materials to be deposited mainly in a flat position.

At least three different brick formats were recognized: squared, rectangular, and triangular with one curved side (probably, column segments) (Fig. 6.19).²³ It is worthy of note that some of the squared bricks have the same format (36 × 36 × 7 cm) of those identified in Trench 3²⁴ and seem very similar to the bricks in the texture of the platform –or altar (?)– likewise brought to light by Stein.²⁵ Whether the brick fragments belonged to a structure built on the platform SU4 + SU9 or is yet unclear but probable.

²³ Baqherian et al. 2016, fig. 8.

²⁴ See below in this chapter.

²⁵ Stein 1940, 147.



Figure 6.18 - Trench 1, SU 4 and SU 7 from the east



Figure 6.19 - Trench 1. Baked bricks and column segments from SU 6 and SU 7



Figure 6.20 - Trench 1. Selection of microliths from SU 16

SU7 also contained fragments of a bronze strainer (?) (chapter 9, no. 48/SO97). Another layer leaning against the east facade of SU4, covered by SU7, was detected (SU16) and completely excavated down to a depth of 1003.590 m asl. It is characterised by the presence of miscellaneous archaeological materials such as potsherds, fragments of baked bricks, fragments of metal objects, and prehistoric microliths (Fig. 6.20).²⁶ Since these microliths were not in their original positions and were mixed with materials from later periods, this layer can be interpreted as the result of disturbed and mingled archaeological deposits. It is worthy of mention the finding of a fragmentary betyl in surface layers (chapter 9, no. 78/SO96).

While removing the layers leaning against the wall SU4, it was possible to see the texture of the wall itself. Below the upper row of stones, mainly composed of bigger stones that have at least one flat side (the one towards the east) and seem regularly aligned, the wall texture is very irregular, including stones of different size mixed with abundant soil and disorderly arranged, so that in many cases it is impossible to detect the presence of proper rows (Fig. 6.21). The varying height of the wall from 0.64 to about 1 m, however, probably compensates the irregularity of the terrace's ground. In the two spots where excavation reached deeper layers, a thick stratum covered by SU4 and lacking archaeological materials was identified and partly removed (SU8).²⁷ It is almost certainly of natural origin and was perforated down to a depth of about 80 cm, thus reaching ca. 2 m below the surface.

To the south, wall SU4 is cut by the foundation of a modern structure (SU11) that has a slightly different orientation: it is a quadrangular room or enclosure of about 3 × 3 m, built of irregular or roughly squared undressed stones and rubble arranged in regular rows. The north and south walls of this structure are approximately east-west oriented, emerging at about 1005.310 m asl and being laid at about 1003.850 m asl; the east wall was not unearthed but it presumably runs parallel to the west one. The north wall of SU11 is about 90 cm thick and clearly superimposed on SU4. The latter extends further to the south, as it can be seen below the foundations of SU11, where it is badly preserved (Figs 6.22-6.23). Beyond the south limit of SU11, the remains of a possibly ancient wall were brought to light (SU22) at an elevation of 1003.450 m asl, beneath a more recent structure (SU21) about 1 m large and at least 2.2 m long (Fig. 6.24). For its orientation and building technique, SU21 can be probably related to SU11, even though its state of preservation does not allow us to establish whether it delimited another room or an enclosure south of SU11. SU22, on the other hand, has a wall texture similar to

²⁶ See chapter 10.

²⁷ One stone microblade found in the upper part of the stratum, probably accidental, is the only exception.



Figure 6.21 - Trench 1. SU 4 and SU 8 from the east

that of SU4, having its east outline roughly aligned with it and an elevation close to that of the remains of SU4 inside SU11. It can be deemed, therefore, that SU22 is the continuation of SU4 after it has been cut by the foundation of SU11. Unfortunately, no archaeological materials have been found in this area to suggest a more precise date or interpretation for these structures.

The evidence brought to light in Trench 1 reveals that SU4 is a great retaining wall, delimiting the east side of a platform, which is not yet completely exposed. SU4 has been cut and re-used in modern times for the foundation of small structures (SU11 and SU21). In Trench 1, the preservation of the archaeological layers has been significantly hindered by the agricultural exploitation of the area in the last century. However, it must be also stressed that the ancient strata leaning against SU4 and containing miscellaneous archaeological materials are untouched at least in the central part of the trench.

Trench 8

Trench 8 is less than 10 m east of Trench 1. An area of 9 × 4 m approximately east-west oriented was dug in 2014 and partly reopened in 2015. Since excavations carried out in 2014 allowed us to discover part of a large north-south wall foundation (SU7) in the middle of the trench, in 2015 the latter was widened up to about 12 m to the north and 6 m to the south for a total length of about 23 m, with the aim of better understanding its layout. Further enlargements of the trench led to the irregular layout of the excavated area, whose width vary considerably ranging from about 4 to 9.5 m (Fig. 6.25). In this area the terrace's surface gently slopes to the east and south: more specifically, the surface elevation



Figure 6.22 - Trench 1. SU 11 and SU 4 from the east



Figure 6.23 - Trench 1. SU 11 and SU 4 from the south



Figure 6.24 - Trench 1. SU 11 and SU 4 from the south (detail)

gap between the north and to the south part of the trench is about 1 m, while between its west and east part is about 20 cm.²⁸

Wall SU 7 lies directly under the surface (its top was reached at a depth of 20-40 cm).²⁹ It is built of irregular undressed stones, among which only a few are roughly squared. The east and west façades are well defined, having been made of stones regularly aligned and usually bigger than those in the wall's adobe. The latter consists of various-sized stones, irregularly arranged and mixed with soil. The part of the wall brought to light is 22.88 m long. Starting from the north limit of the trench, SU7 is well preserved for 19.73 m (Fig. 6.26), being severely damaged further to the south (Fig. 6.27). At 7.1 m from the north limit, SU7's east side is also badly preserved, especially in its upper rows, for about 2.7 m. The wall extends further to the north beyond the excavated area and, at least for its east side, also to the south. Proceeding northwards, it becomes narrower, having a width of 2.60 m in its south part but reaching the width of 1.8-1.9 m approaching the north limit. If this considerable difference in thickness from south to north surely accounts for the general irregularity of the structure, it must be also stressed that the east side was damaged at some point of its history, as it is still clearly visible at about 7 m from the north limit. It seems in fact that this trait of the east façade was later repaired, even though it still clearly appears quite irregular if compared to its south part.

²⁸ The surface elevation is 1005.103 m asl in the north part of the trench, 1004.733 m asl in the central part and 1004.153 asl in the south part.

²⁹ The top elevations of SU7 vary from 1004.873 to 1003.693 m asl from north to south.

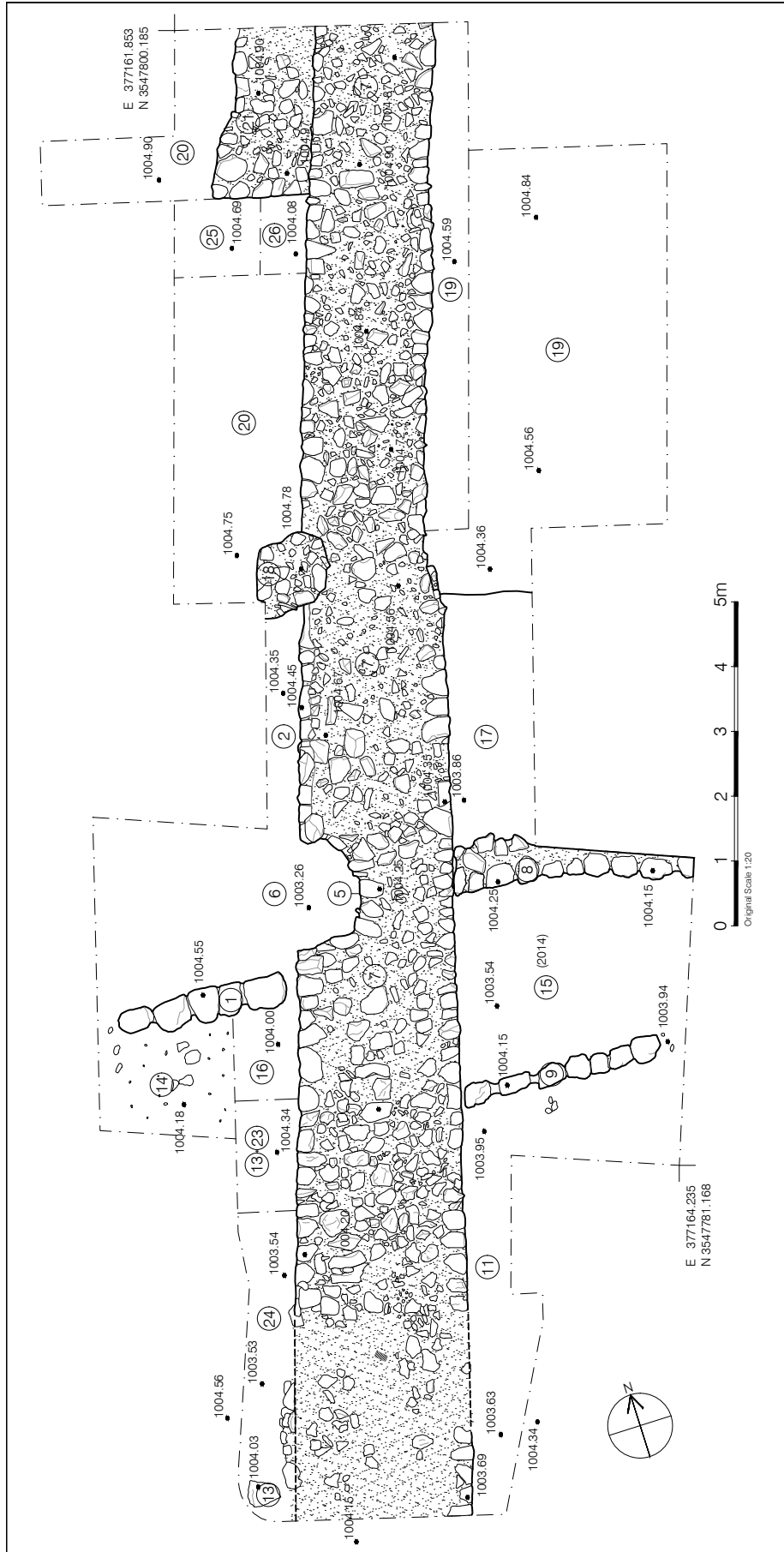


Figure 6.25 - Trench 8. Layout of the excavated area (scale 1:100)



Figure 6.26 - Trench 8. SU 7 from the north



Figure 6.27 - Trench 8. SU 7 from the south

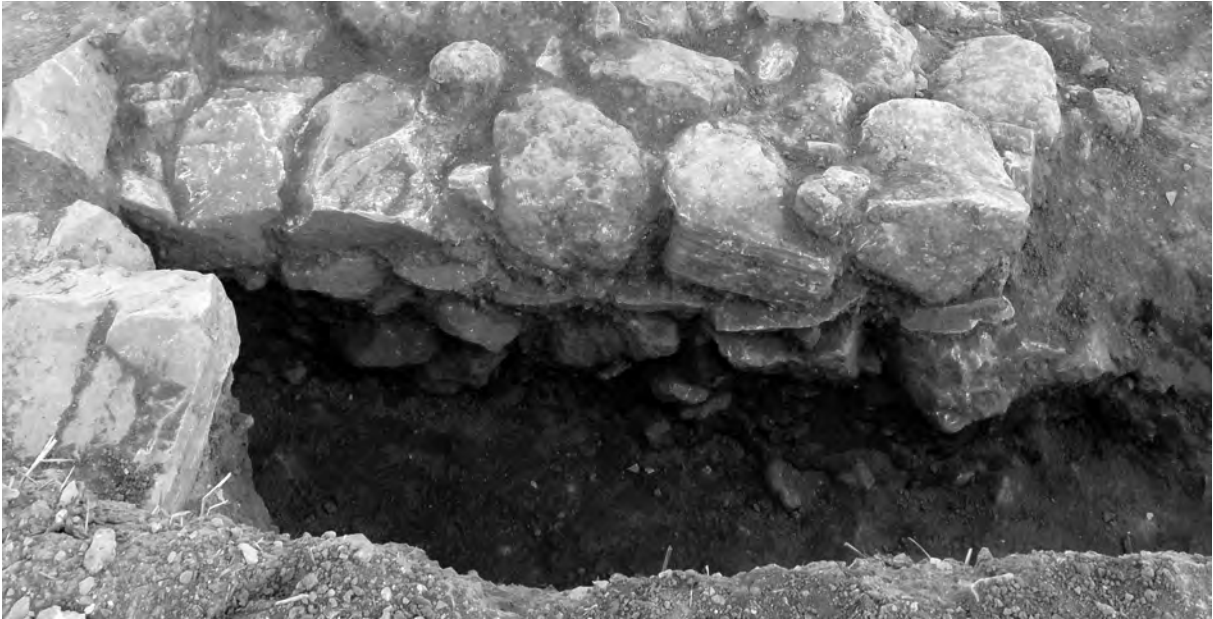


Figure 6.28 - Trench 8. Southern part of SU 7 from the west



Figure 6.29 - Trench 8. SU 7, SU 8 and SU 9 from the east

Unfortunately, it was not possible to expose the entire height of the wall in the north-east part of the trench and in so doing verify whether the base of the structure was larger than the top or not. Stones in SU7 are arranged in rows that vary in number from two to five and differ from east to west and north to south, thus probably compensating the irregularity of the terrace's ground. Therefore, to analyse the wall's texture and evaluate its state of preservation, the east and west sides were cleared in several spots, where the entire preserved wall was brought to light. In the south part of the trench,



Figure 6.30 - Trench 8. Northern part of SU 7 from the west



Figure 6.31 - Trench 8. Southern part of SU 7 from the north

in a sounding on the west side (roughly measuring 1.60×0.85 m), at least five rows were identified for a total depth of 64 cm from the top (1004.203 m asl) to the bottom (1003.563 m asl). The first and third rows are made up of roughly regularised stones of bigger size, divided by a row of arranged flat stones; the two lowest rows are made of smaller stones. Some baked brick fragments are visible in the section (Fig. 6.28).

In the central part of the wall, where the top was reached at about 1004.253 m asl, the west side is preserved for two rows (bottom at 1004.003 m asl), while the east one is preserved for at least four rows (bottom at 1003.540 m asl) (Fig. 6.29). However, to the north of SU8 only three rows were brought to light, for a height of 47 cm. In the north part of the trench, south of SU21, excavations brought to light part of the west side of SU7, which is preserved here for four rows (bottom at 1004.193 m asl) and a height of 68 cm from its top (1004.873 m asl) (Fig. 6.30). The fact that in all these spots the upper row appears more regular and usually delimited by stones bigger than those found in the rows below seems a reasonable argument to interpret it as the first row above the wall foundations.

In the south part of Trench 8, at about 3 m from the excavation limit, wall SU7 is severely damaged and seems to disappear. Here a ditch of about 2.20×3 m (SU27) was discovered that partially damages SU7's west side and the layers leaning against it (SU13 + SU23 and SU24). The façade stones of SU7 re-appear on the east side after a gap of 1.86 m (Fig. 6.31), while those from the west side were disassembled, so that the southernmost part of the wall's west outline cannot be identified (Figs 6.25, 6.27). The layer that fills SU27, SU22, was found just under the surface.³⁰ It contains a lot of charcoals, some big pieces of charred wood, partially burnt stones and lumps of reddish burnt soil mixed with a soft dark-brown terrain. In addition, few fragments of animal bones were found, which do not present burning signs. Therefore, SU27 and SU22 could possibly be interpreted as a dump for the remains of a fire. It seems unlikely, however, that these fire remains are to be related to the layers rich in ashes documented by Stein,³¹ even though this cannot be ruled out due to the impossibility to locate the building unearthed by him exactly and to the absence of diagnostic materials in SU22.

The layers on the west side of SU7 and the south side of SU1 (SU13 + SU23 and SU24) are characterised by the presence of small and medium size stones mixed with soil. SU13 + SU23 lean against wall SU7, while SU24 seems to continue below the bottom of the wall,³² being probably precedent to SU7. These layers contained scanty but disparate archaeological materials. In SU23 a prehistoric microlith,³³ few undiagnostic potsherds³⁴ and some animal bones were found; SU24 contained two fragmentary stone objects, perhaps pestles (chapter 9, nos 53-54/SO74-SO75)³⁵ and some baked brick fragments. The layer leaning against the east side of SU7 and the south side of SU9 (SU11), only partially removed,³⁶ didn't contain, on the other hand, archaeological materials.

In the central part of the trench, SU7 is joined to three modern walls roughly east-west oriented (SU1, SU8 and SU9), which extend beyond the east and west excavation limits. Wall SU1, leaning against the west side of SU7, is about 40 cm wide and at least 2.60 m long. It is built of irregular or roughly squared undressed stones: its top was reached at 1004.550 m asl, at a depth of about 20 cm from the present surface. It appears that SU1 is only composed by a single row of stones (as wall SU9), its foundations having been laid at 1004.290 m asl. Moreover, SU1 seems to be aligned to a ditch measuring 1.64×0.96 m (SU5) dug into the west side of SU7, where medium-size stones have been intentionally shifted or laid down to delimit SU5 (Fig. 6.32). Two layers characterised by the presence of ashes and some burnt bone fragments have been found in this part of the trench (SU4 and SU6), suggesting that it could have

³⁰ The elevations of SU27 are 1004.11 m asl (top) and 1003.74 m asl (bottom). The surface elevation on the south-west side of Trench 8 is 1004.56 m. asl, while on the south side of the trench is 1004.15 m asl.

³¹ Stein 1940, 149.

³² SU24, not completely removed, was excavated down to a depth of 1003.53 m asl (southern part) and 1003.54 m asl (northern part), while the bottom of SU7, on its south-eastern part, has an elevation of 1003.56 m asl.

³³ On the prehistoric materials from Kal-e Chendar see chapter 10.

³⁴ On the pottery from Kal-e Chendar see chapter 7.

³⁵ On the small objects from Kal-e Chendar see chapter 9.

³⁶ The layer was excavated until a depth of 1003.63 m asl.



Figure 6.32 - Trench 8 during excavation from the west

been used in modern times as a dumping area. This situation seems to parallel that of SU22, as they also consist of layers containing ashes, rubble stones and scanty of archaeological materials.

To the south of SU1, a layer containing rubble stones of small and medium size mixed with soil characterised by the presence of clay lumps and ashes was identified below SU13 + SU23 (SU14). It was partially excavated in a small deep sounding (measuring 1.7×0.9 m) along the west side of SU7, where a few potsherds and some prehistoric microliths were found. The small sounding allowed us to assess the preservation of the wall in this point, revealing that only two rows of stones were still in place and that the wall itself had been laid on a layer of dark brown soil mixed with small- and medium-sized rubble stones and characterized by the presence of some ashes (SU16), which lacks archaeological material. Walls SU8 and SU9 lean against the east facade of SU7. SU8, built of undressed stones, is about 75 cm wide and about 3.60 m long. On its south side, SU8 is preserved for at least five superimposed rows of stones, its top having been reached at an elevation of 1004.250 m asl and its bottom at 1003.540 m asl.

SU9, which runs almost parallel to SU8, was reached at an elevation of 1004.150 m asl. It is built of only one row of mostly roughly squared undressed stones bigger than those in SU8's texture (as wall SU1), is about 40 cm wide and 3.20 m long. Walls SU7, SU8, and SU9 delimit a rectangular space, probably a room or an enclosure, of at least 2.4×3.6 m (Fig. 6.29). However, the different technique used to build SU8 and SU9 might indicate that these two walls were not made at the same time and that they represent two different phases of later structures leaning against SU7. The final layout brought to light during our excavation could be thus the final phase, after one of the two walls (possibly SU9) was added to the previous one. The space of the room or enclosure delimited by SU7, SU8 and SU9 was then filled with deposits (SU10, SU12 and SU15), containing scanty archaeological materials, including some non-diagnostic potsherds and a fragment of a prehistoric microlith (in SU15).

To the north of SU8, a filling layer containing rubble stones and few archaeological findings, including some non-diagnostic potsherds and a fragment of worked stone, was found (SU17). The soil from the



Figure 6.33 - Trench 8, SU 19 from the south

layer is characterised by the presence of numerous small gypsum lumps, charcoals, and few traces of animal bone fragments. SU17 leans against the north side of SU8 and the east side of SU7, filling the area bordered by them. To the north, it also leans against SU19. In this area, a modern food can was found, confirming the recent formation of SU17 and the fact that human activities carried out in the last century have significantly hindered the archaeological context. To the north, a layer of irregular stones of various size mixed with soil, containing very few potsherds and bone fragments was detected (SU19). It leans against the east façade of wall SU7, occupying the whole area between SU7 and the east excavation limit (Fig. 6.33). The stones from the layer are mostly large- and medium-sized and seem to be arranged to create a levelled surface. The north part of the trench was then further widened up to 2 m to the east, revealing that the layer continues beyond the north and east excavation limits. SU19 was only removed for an area of about 50-60 cm along SU7 with the aim of clearing the upper outline of the wall.

The part of the trench west of SU7 was only partially excavated, except for a small area at the north limit. Here a structure built of undressed stones of various size and few baked bricks was discovered (SU21) that leans against the west façade of SU7. The stones are irregular, as only some of them on the south and west sides seem partially cut on purpose. The structure itself is irregular in shape: the south side is well defined, being composed of stones regularly aligned, the west and north sides are irregular (Fig. 6.34). It is also unclear if SU21 continues beyond the north excavation limit: the part exposed, which seems only partially preserved, is about 2.5 m long and 1.2 to 1.5 m wide; on its south side two superimposed rows are visible (bottom at 1004.693 m asl) (Fig. 6.35). The structure may be interpreted as what remains of a wall more recent than SU7, built for purposes that remain unclear. A filling layer leaning against SU18, SU7 and SU21 was identified (SU20) that contained rubble and many fragments of baked bricks (5.5-6.5 cm and 8 cm thick) and a microlith. To the west and south-west, SU20 extends further exceeding the trench's limit. It was not completely excavated: its bottom (1004.693 m asl) was



Figure 6.34 - Trench 8. Northern parts of SU 7 and SU 21 from the west



Figure 6.35 - Trench 8. West side of SU 7 and south side of SU 21

reached only in SU21. The investigations conducted in this area of the trench allowed us to verify the preservation SU21 and SU7. The first is laid on a layer containing rubble mixed with soil (SU25) (Fig. 6.35), the second on a layer characterised by the presence of rubble and gypsum lumps (SU26) (Fig. 6.30), which was partially excavated down to the depth of 1004.083 m asl, being the deepest level reached in this part of the trench.

Excavations confirmed that SU7 is the most ancient structure brought to light in Trench 8. Its original plan and function are still unclear, however, and unfortunately no absolute dating elements have been found. SU7 was damaged by cuts made in its west side after its construction (SU5 and SU27) and probably related to the creation of dumping areas, while some walls (SU1, SU8, SU9 and SU21) seem to have been built at a later stage by re-using its remains. They have been laid against SU7 as if it was the main division wall of small rooms or enclosures, whose exact number and layout cannot be established at present. Moreover, the fact that these later walls differ in building technique and elevation suggests that they are most likely to be ascribed to different phases. The layers leaning against the east and west sides of SU7, containing mostly rubble stones and miscellaneous archaeological finds of various dates, similarly attest repeated human activities in the area, sometimes even in very recent times as the discovery of a modern food can in SU17 confirms.

Interpretation of the structures unearthed in Trenches 1 and 8

The stratigraphy of Trench 1 is similar to that of Trench 8 for the paucity of archaeological finds from deeper strata and in the disturbed context of the layers and fillings related to the unearthed ancient structures.³⁷ It must be stressed that, as a general rule, on the Upper Terrace the preservation of archaeological layers dated to the Hellenistic and Parthian periods has been severely hindered by repeated human activities carried out in the area especially in the last century, mainly including excavations to lay the foundations of modern houses, the pillage of architectural materials from ancient structures (sometimes clearly recognisable in the wall texture of the village's houses), and ploughing. As far as the preservation of the archaeological layers more ancient than the Hellenistic-Parthian era is concerned, on the other hand, it is interesting to note that in both trenches objects and fragments from microlithic industries were found on the surface as well as in deeper strata.³⁸ Unfortunately, none of them was found in its original position –they were often mixed with much later artefacts–, so that we can only say that the area was frequented in prehistoric times. It must be said that, even if such microliths have been found on surface in other areas of the site, their highest occurrence in strata has been documented in Trenches 1 and 8.

The main structures unearthed in Trenches 1 and 8, namely SU4 and SU7, appear to be related to the same archaeological context, although it is unclear at present whether they are interconnected by orthogonal walls or simply run parallel (Fig. 6.36). On some photos taken from Qal'eh-ye Vali,³⁹ it is possible to see some dark areas which, considered together, seem to form a regular pattern (Figs 6.37–6.38). Such photos were taken before Trench 8 was opened and Trench 1 was widened. A row of dark patches is visible in the same area of Trench 8: it seems to form a rectangular shape having a north-south direction. It is possible that the dark patches, in this case, follow wall SU7. Other dark patches seem to form other two rectangular shapes, having an east-west direction and being perpendicular. They appear in correspondence of both the south and north limits of SU7 and seem to continue towards the east. Other patches are visible in correspondence of wall SU4, particularly in its north part: again, they jointly seem to suggest the presence of a buried structure east-west oriented. Generally, the dark color in damp-mark anomalies is associated with greater soil moisture and may suggest the presence of ditches. However, it may also occur that dark traces suggest the presence of buried stone structures,

³⁷ Potsherds, in large part barely diagnostic, but generally datable to the Parthian period, have been found in SU1, SU3, SU6, SU16 of Trench 1, and in SU12 and SU17 of Trench 8. For the most, they are in Common Ware, but also few examples of Glazed, Red-Slip ware and Cooking Ware can occur (see chapter 7).

³⁸ The highest number of microliths has been found in SU16 in Trench 1 and in SU14 in Trench 8.

³⁹ On Qal'eh-ye Vali see Messina, Mehr Kian 2014, 69, fig. 9; Messina 2015, 198; Messina, Mehr Kian 2016, 441; Baqherian et al. 2016, 71, 85; Bucci et al. 2017, 11; Messina, Mehr Kian 2018, 299 as well as chapter 2.

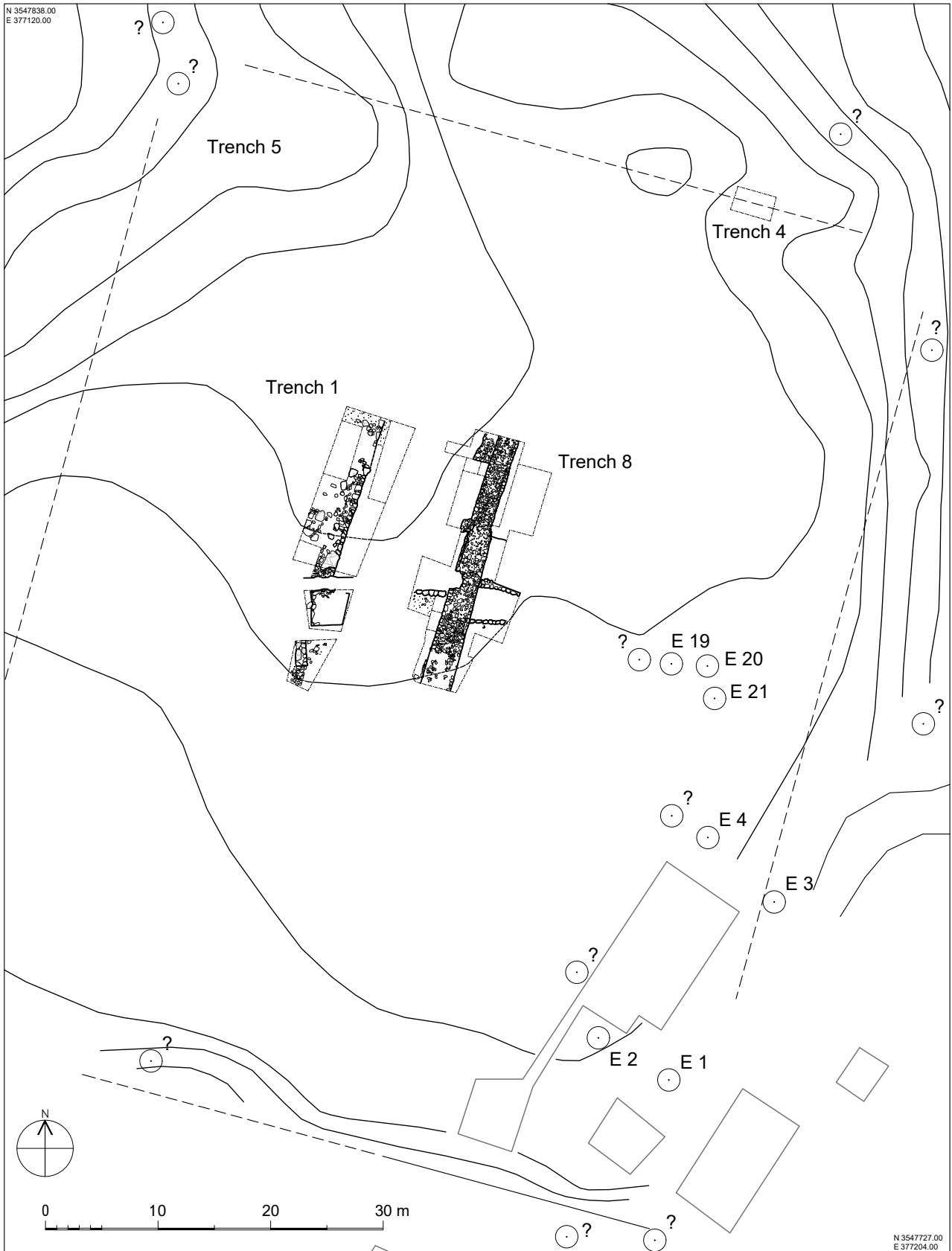


Figure 6.36 - Trenches 1 and 8. Layout of the excavated areas (scale 1:500)



Figure 6.37 - Upper Terrace. Trenches 1 and 8. Aerial photo taken from UAV

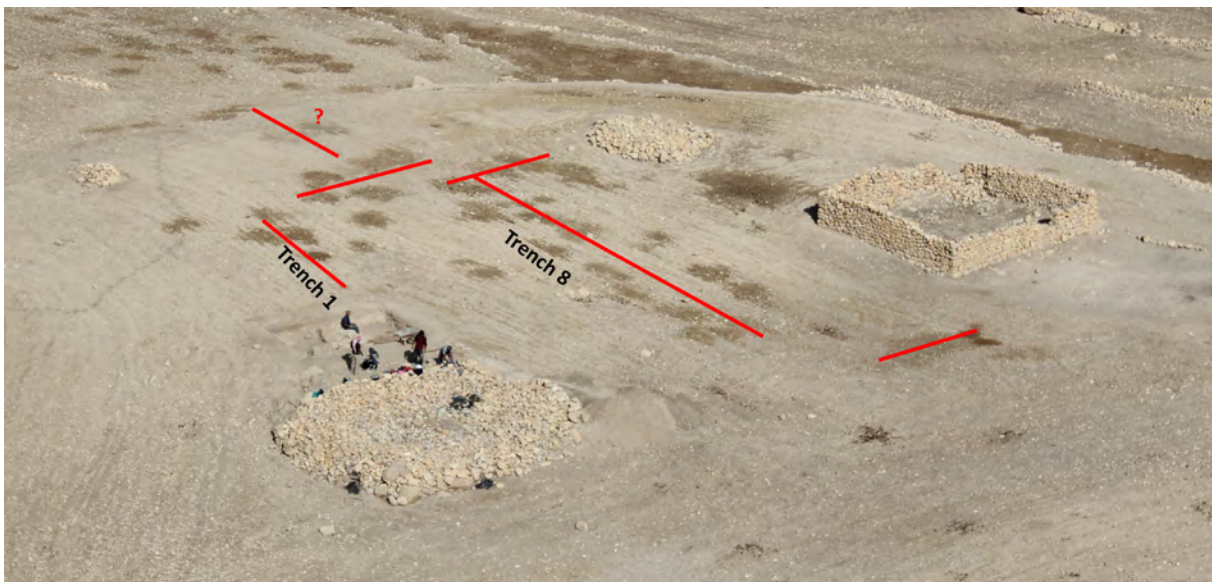


Figure 6.38 - Upper Terrace. Trenches 1 and 8. Aerial photo taken from UAV. Damp-marks anomalies

if there is an accumulation of material causing a water stagnation in the ground.⁴⁰ The presence of dark traces can also suggest the existence of clay buried structures,⁴¹ as well as the presence of strong concentrations of organic material in the soil.⁴²

In the area of Kal-e Chendar, buildings seem to have been constructed mainly of stone: on satellite images the walls of buried or ruined structures appear generally as white lines.⁴³ It seems more reasonable that, in the present case, the dark patches seen on the photos represent negative traces of the outside part of the walls. If the dark patches were the traces of still-to-dig walls, the patches showing a pattern perpendicular to wall SU7 could possibly represent the north and south walls connected to it. In this case, it would be possible to postulate that SU7 was part of a large-size structure

⁴⁰ On 'damp-marks' on archaeological photointerpretation see for example Piccarreta 1987, 121-126, 135-136, 155-162; Piccarreta, Ceraudo 2000, 104-106, 124-126; Wilson 2000, 54, 61-62.

⁴¹ Wilson 2000, 62, 65.

⁴² Piccarreta 1987, 136; Piccarreta, Ceraudo 2000, 112; Wilson 2000, 54.

⁴³ On the interpretation of spots or bright lines as traces of buried stone walls in photointerpretation, see for example Piccarreta 1987, 121-126, 155-162; Piccarreta, Ceraudo 2000, 104-106.

facing east. Similarly, the dark patches between Trench 1 and Trench 8 could maybe represent the traces of an east-west wall leaning against SU4 and perhaps joining it to SU7. However, it seems more reasonable that the dark patches seen on the photos represent negative traces of the outside part of the walls. It must be said that the damp-mark anomalies already described seem to appear only on the photos taken from Qal'eh-ye Vali: they are not present on other images or detectable by topographic data. The possibility that some of the dark patches could represent walls perpendicular to SU4 and SU7 could only be validated by further excavations.

At the present state of our research, it is thus possible to state that wall SU7 seems to follow the same orientation of the retaining wall SU4, at less than 10 m. Both these structures were discovered at their foundation level or just above, and unfortunately one cannot say if their standing masonry was made of stones, nor what was their total height above foundations. Their layout and function, though, was most likely different as SU4 is a retaining wall, while SU7 is a monumental wall with two well defined façades. In any case, their orientation is perpendicular to that of the enclosure supposedly discovered by Stein.

Both SU4 and SU7 could have been the support for structures now lost. Even considering the monumentality suggested by what remains of these structures, however, it is impossible to reconstruct their original height and appearance as well as the upper part of their masonry. The latter could have also been made of baked bricks although there is no evidence to support such a hypothesis. The existence of baked brick structures such as altars or platforms is however attested at the site by the ruined structures discovered by Stein⁴⁴ and by our excavation.⁴⁵ If the building technique parallel that of other ancient structures excavated at the site, there is no comparison for the monumentality of SU4 and SU7. Their size, position, and relation – a retaining wall behind a monumental building or enclosure (Fig. 6.36) – can be rather compared to the structures found on the terraces of the sanctuaries of Bard-e Neshandeh and Majid-e Sulayman.⁴⁶ Bard-e Neshandeh, more specifically, appears to display a similar layout on the lower terrace. Close to the so-called Tetrastyle Temple,⁴⁷ which is characterised by large irregular walls built of undressed stones, more than 2 m thick, a socle dividing the gap between the lower and the upper terraces has features similar to those of SU4, as it is a retaining wall bordered by stones regularly aligned on one side and filled with stones mixed with soil.⁴⁸

Since the few archaeological artefacts and architectural elements unearthed so far had all been displaced from their original position, it is impossible to reconstruct a clear periodisation related to one or more uses of the area. The features of SU4 and SU7 make clear that the former was a retaining wall delimiting a wide platform or a terrace, and the latter was part of an enclosure or a building. Given its monumentality and the absence of ancient perpendicular joining walls creating rooms and smaller spaces, it seems plausible that SU7 was a kind of monumental enclosure including a building or shrine. The possible presence of two large perpendicular east-west walls, that could be suggested by remote-sensing analysis, might confirm the hypothesis of an enclosure.

6.3.2 Trench 2 (A. Cellerino, E. Foietta)

Trench 2 is located at the south-west corner of the Upper Terrace, in a point that seems to correspond to the terrace's ancient retaining wall (Fig. 6.39). In this point, the surface is about 2 m deeper than the surface at the terrace's centre as the topsoil likely slopes towards the east. The latter slope hardly appears natural. It is probably rather due to a landslide caused by the collapse of the terrace's retaining wall, as it may be deduced by the contour of the wall itself. The trench was a square of 4 × 4 m oriented to the north, which has been widened up to 6 × 5 m. At the west limit of the trench, two huge boulders still emerged from the ground in what was their original position. The latter boulders have been in all

⁴⁴ Stein 1940, 147-148.

⁴⁵ See Trench 3 in the present chapter.

⁴⁶ Ghirshman 1976.

⁴⁷ Ghirshman 1976, 39-41, fig. 16, plan I-II.

⁴⁸ Ghirshman 1976, 19, fig 9, plan I.

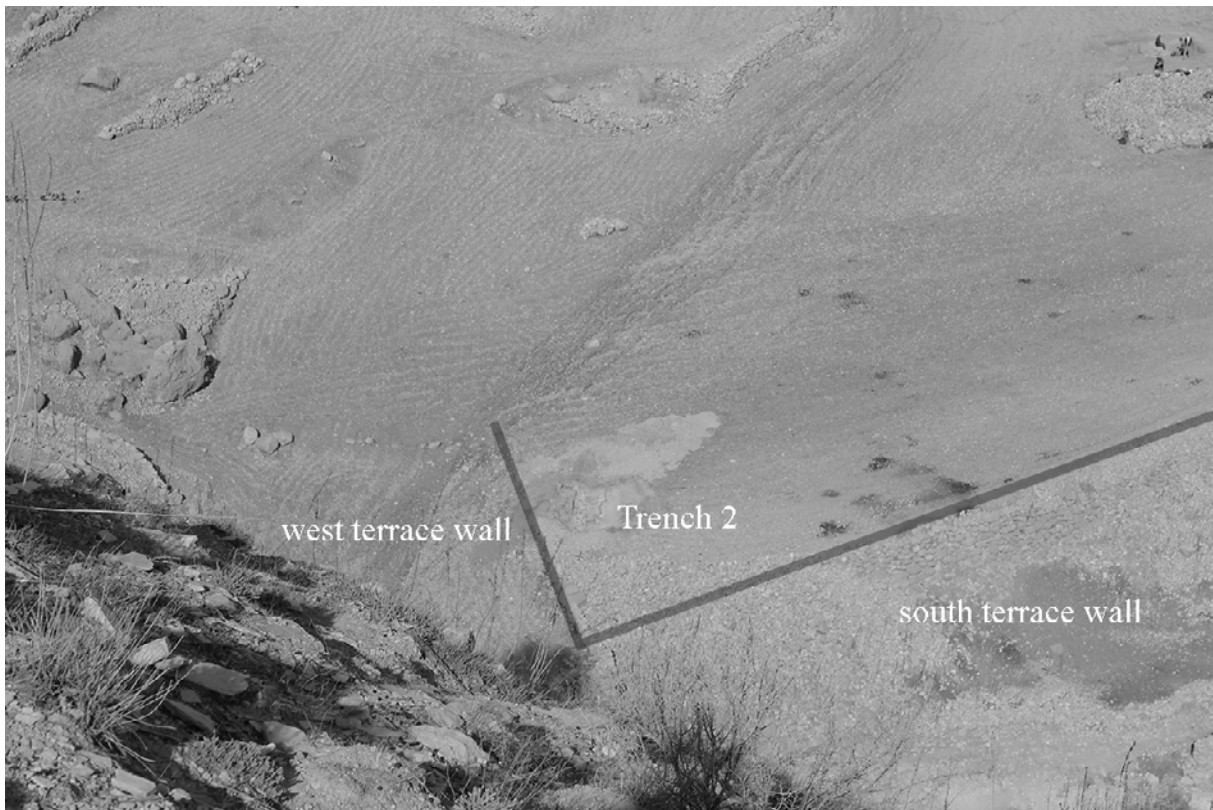


Figure 6.39 - Trench 2. Location and orientation of the west and south Upper Terrace's walls seen from Qal'eh-ye Vali

evidence placed in that point on purpose: this was probably done to strengthen the terrace's retaining wall.

Just below the surface (1002.760 m asl), a huge structure in stone (SU1) has been partially cleared (at an elevation of 1002.370 m asl). This is built of undressed roughly cut stones, partly loose and decayed, which appear to have been disposed at least on 6 rows (Figs 6.40-6.41). Almost three fragments of well-cut blocks were re-employed with other, more irregular, stones (Fig. 6.42). This probably testifies to the reuse of ancient material at the site, a process likewise visible in other structures. The rows of stones unearthed in Trench 2 could be interpreted as part of the terrace's retaining wall. This was almost oriented to the northeast and measured at least 3.8 m in width (likely more), extending for more than 5 m in length well beyond the trench's limits. The wall's east limit is better preserved than the west one, corresponding to the terrace's façade. The latter has collapsed in ancient times, leaving in situ only the retaining wall's inner part.

Given that this wall is very close to what is supposed to have been the terrace's corner (before the collapse of the wall itself), the rows of stones there unearthed can be interpreted as what remains of the terrace's west wall, and the two huge boulders still in their position at the west limit of the trench as part of the terrace west façade (Fig. 6.43). The upper rows of this structure appear to be partly loose and decayed. The stone wall contains a filling (SU2) entirely composed by rubble and pebbles (at 1002.050 m asl), probably laid to level the terrace's ground in ancient times. Such a filling was found over all the excavated area. Excavation in depth, hindered by the presence of the filling itself, was stopped at about 60 cm below the surface. It is worthy of note that no archaeological materials were found in the exposed strata. Close to Trench 2, the terrace's west wall was connected to the better-known south wall, easily detectable for its prominent amount of rubble and stones on the ground and satellite images. This impressive retaining wall overlooks the south stream and follows the morphology of the terrain until the terrace's south-west corner.

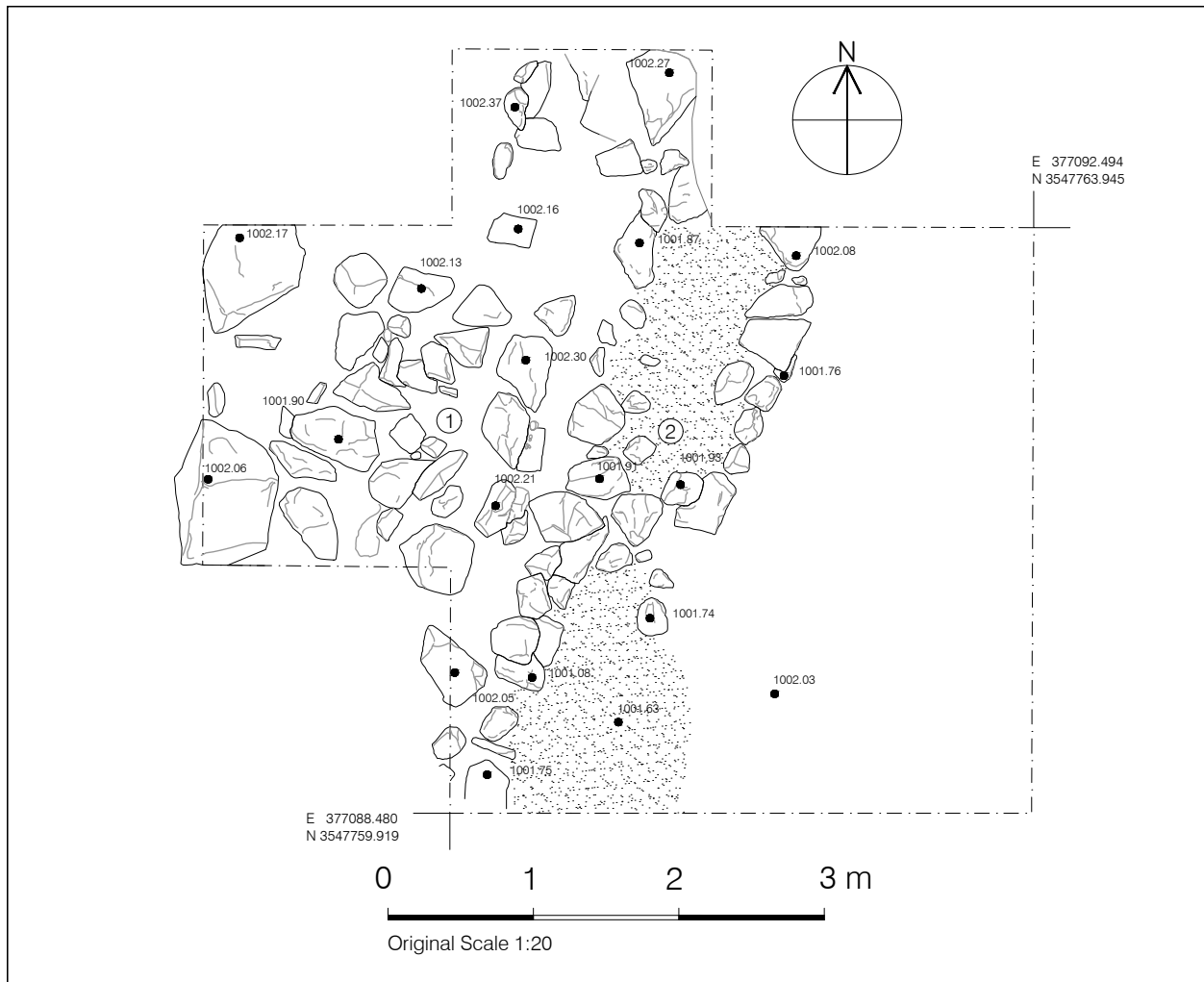


Figure 6.40 - Trench 2. Layout of the excavated area (scale 1:50)

Basing on the data acquired in Trench 2 it may be supposed that thick layers of rubble and pebbles were placed between the terrace's retaining walls and soil to regularize the terrace's surface. This happened in points that must also be strengthened to better retain the regularized surface, such as the terrace's corners. Retaining walls were then made of bigger undressed stones, as a rule roughly cut and irregular, while the façade (of which probably only two boulder remains) could be made of very big and more regular stones, likewise undressed. The fact that the retaining wall collapsed in this point shows that the corner was indeed one of the parts of structural weakness of the building.

6.3.3 Trench 4 (J. Mehr Kian)

Trench 4 was opened across the presumed north-east limit of the Upper Terrace, with the purpose of verifying the existence of a retaining wall in that point. The trench, a narrow rectangle measuring 1×10 m, was excavated only to a limited depth, as some huge stones and boulders were reached just below the surface (Fig. 6.44). Thus, only the surface layer has been removed to clarify the position of the latter stones and boulders. These appear to have been part of ancient wall masonry, as they clearly seem in their original position, and appear to have been aligned at least on 3 rows. The building technique is similar but not exactly the same of the retaining wall discovered in Trench 2. In Trench 4, the wall retains a filling composed by some rubble and soil, as there was probably no necessity to use huge quantities of pebbles and rubble to regularize the natural terrain slope in this point. What remains of the terrace's retaining wall in Trench 4 does not preserve any traces of the original façade. We see here only the courses, partly collapsed, that were laid behind the façade to retain the terrace's filling. It is impossible to say how much the retaining wall was thick, but it would not be surprising



Figure 6.41 - Trench 2, SU 1 from the south-east



Figure 6.42 - Trench 2, SU 1 from the east. Detail of reused cut-stone



Figure 6.43 - Trench 2. Detail of the Upper Terrace's west retaining wall

to find, in places where it could be better preserved, that it reached at least 3 m in thickness. If this hypothesis is correct, the thickness of the terrace's retaining walls could vary depending on their position. The wall unearthed in Trench 2 was indeed thicker.

No potsherds or other materials have been found and the trench was covered at the end of fieldwork.

6.3.4 Trench 5 (A. Cellerino, E. Foietta)

Trench 5 is a rectangle measuring 3 × 10 m, roughly oriented east-westwards. It follows the same orientation of a modern ruined wall, which could have been built over the remains of more ancient structures. Trench 5 has been opened just to verify the latter possibility as the position of the modern wall, probably what remains of an enclosure built to store crops after harvesting, overlaps what could have been the north limit of the Upper Terrace. Surface layers revealed the presence of scanty potsherds, particularly fragments of big storage jars decorated with a ribbing, which appear to be late Islamic. Below the topsoil, a layer of rubble and loose earth was discovered. No structures were found below the modern wall. For this reason, excavation was stopped at 50 cm below the surface.

6.3.5 Trench 6 (= T9) (Y. Baqherian, M. Faraji, J. Mehr Kian)

Trench 6 was opened on the place of a tomb already recognized during our survey at the site and named T9. This is located by the south stream, at about 100 m west of the Upper Terrace and at an elevation of about 1030 m asl. In this point, the ruins of two tombs, T15 and T9, were clearly visible. Both were heavily looted and covered by rubble and debris to hide their looted remains.

T9 was made free from debris. There was no possibility to reconstruct the tomb's stratigraphy, as it was completely excavated by looters and even partly destroyed by unauthorized activities. After the removing of debris, it was possible to see the remains of a chamber measuring of 4.5 × 2.4 m, roughly oriented to the east. Only part of the perimeter walls and part of the façade were preserved (Fig. 6.45). The tomb's entrance looked toward the east (that is to say toward the Upper Terrace). No human



Figure 6.44 - Trench 4 from the north

remains were found; few potsherds dated to the Parthian period, residual of a funerary set, were found among debris encumbering the chamber (SU6).

Perimeter walls are made of undressed irregular stones and rubble (Fig. 6.46). The chamber, which probably belonged to a family tomb, was filled by the debris of the collapsed roof (probably, a saddle roof made of huge stones broken by looters to reach the chamber itself). Debris, including two stones that could be part of the roof, were completely removed as they clearly made instable the remains of the perimeter walls. Below the debris, a floor made of irregular flat stones was reached, together with a low funerary bench (rising about 20 cm from the floor), likewise made of undressed stones and laid against the chamber's north wall. The bench was broken by plunderers. The chamber appears to have been at least 2 m high, and even if it was an underground structure for its larger part, it could be deemed that its façade emerged from the ancient sloping ground, having been well visible to visitors.

6.4 The area of Terrace 3 (V. Messina)

Terrace 3, located c. 60 m north-east of the Upper Terrace, was identified thanks to the observation of satellite imagery (Fig. 2.3). Its surface was characterized by a reflectivity emphasizing areas of whitish colour; in addition, clear alignments north-south and east-west oriented testified to a regular ground morphology that could hardly be related to the natural terrain conformation. Both anomalies were indeed the consequence of features related to ancient building activities: ground survey allowed us to verify that surface reflectivity was related to the presence of clusters of ancient baked brick fragments spotted on the topsoil, while well-oriented alignments corresponded to what remains of



Figure 6.45 - Trench 6 (= T9). Ruined funerary chamber after excavation from the east

the terrace's ancient retaining walls. The terrace's north-east corner was particularly well visible, as it still overlooks a hollow originated by the natural ground slope.

Terrace 3 (Fig. 4.2), a monumental structure built as usual to regularize the terrain slope and offer a wide flat surface, appears rectangular in shape, with its long sides north-south oriented: only its east and, partially, north retaining walls are well visible, the others can only be perceived thanks to the contour lines derived from ground topography. Basing both on ground survey and remote sensing observation, the terrace's size may be estimated in $105 \times c. 90$ m, corresponding to about $9,500 \text{ m}^2$, thus matching the extension of the Upper Terrace. The best-preserved structure is indeed the terrace's east retaining wall (Fig. 6.47), still emerging for more than 2 m from the ground in the points of maximum height. It may be assumed that such a wall was not much higher than it still is, as the terrace's present topsoil likely corresponds to the ancient one (or it approximates it closely). The wall is built following the usual technique. Boulders and stones of irregular shape and size have been laid, undressed, on more than four rows⁴⁹ to retain a filling of soil, rubble and other stones that allowed builders to make the terrace's surface flat and regular at the best of their capability. Sections of the wall, in all evidence partly collapsed over time, have been repaired in modern times to keep its topsoil flat and regular, as this allowed easier agricultural activities.

Baked brick fragments spotted on the terrace's surface are residual remnants of buildings now lost. Their presence is remarkable, as there are no other places of the site where clusters of brick fragments can be seen so clearly on surface. These clusters testify that baked brick masonries existed at Kal-e Chendar along with the much more diffused stone masonries, which, it must be said, can only be related to foundations as far as one can see. Unfortunately, nothing is left of baked brick buildings,

⁴⁹ At present, four rows of stones are still visible in the points of the wall that have not been integrated by stones in modern times. It may be assumed that at least six rows were needed to reach the preserved wall's elevation. It must be added, however, that the number of rows, in different sections of this more than 100 m long wall, could vary depending on the size of the stones laid in the wall's texture.



Figure 6.46 - Trench 6 (= T9). Ruined funerary chamber after excavation from the north

neither overground nor at foundation levels: a trench opened in the area of one of the identified bricks clusters (Trench 7) only allowed us to find stone foundations of unclear purpose. Thus, the surface distribution of brick fragments is not indicative of buried structures, as fragments have been likely incoherently scattered over a wide area during agricultural works in the last century. Terrace 3 surely supported buildings in ancient times, but the size and layout of these buildings alas remain unclear.⁵⁰ Nevertheless, we have an idea of at least one type of baked brick structure used in antiquity. A trench opened few meters afar from the supposed north-west corner of Terrace 3 (Trench 3) allowed us to discover the remains of a noteworthy brickwork that was likely still standing overground up to recent times.

6.4.1 Trench 3 (A. Cellerino, E. Foiatta)

Trench 3 was opened in a place where baked brick fragments could be seen on the surface. It is a roughly squared trench, measuring 6 × 6 m and oriented east-westwards (Fig. 6.48). Here, a complex structure made of baked bricks, partially covered by a recent stone wall, built to limit cultivated fields, was reached immediately below the surface. This structure is composed by a platform (SU1) and a low stair (SU5). The platform has long sides roughly oriented to the east and measuring 2.5 × 1.8 m (Figs 6.49-6.50), the stair measures at least 2.5 × 3.10 m (Figs 6.51-6.52) and is badly damaged.

Two brick formats have been identified: a square module measuring 35/36 × 35/36 × 8 cm, and a rectangular module (which is half of the former), measuring 35/36 × 16 × 8 cm. Both modules are

⁵⁰ We couldn't explore the context of Terrace 3 more thoroughly, as our fieldwork, though very limited, hindered cultivation.



Figure 6.47 - Terrace 3. East retaining wall from the northeast

used in the construction and arranged, in alternated rows, in what seems a fixed pattern to lay half-bricks at the perimeter (Figs 6.48, 6.53). The platform is preserved at least for ten rows in height, but many bricks have been broken or shifted, especially in the more superficial rows. The preserved top structure is at an elevation of 997.970 m asl. Between the brick courses, a thin layer of clay mortar was clearly visible. A hole, measuring 80 × 90 cm and probably opened in modern times by looters, was found at the centre of the platform. It can be stressed from the brick courses visible thanks to the hole that the structure has different thickness: its north part is about 63 cm thick, the south part 88 cm, the east part 54 cm, and the west part 48 cm. The hole has been filled with brick and stone fragments (SU2) but is lacking potsherd or other archaeological finds.

A thin layer of very compact clay (SU3) was recognized below SU2. This is about 10 cm thick (top at 997.250 m asl; bottom 997.150 m asl) and is composed by green clay lumps and rubble. Considering that a similar layer (SU10) was also found under the stair, it could be supposed that SU3 and SU10 have been laid to level the surface before building the structure. SU3 covered an assemblage of big stones (SU6, top at 997.140 asl), which seem in their natural position (Fig. 6.54). Because of the presence of these stones, the excavation was stopped at 996.890 m asl.

At about 70 cm east of the platform, a stair (SU5) leading to SU1 was unearthed. It consisted of at least 5 steps each made by a single row of bricks and irregular treads (Figs 6.51-6.52, 6.55).

The west side is 2.5 m wide, as the east side of SU1. The stair is composed by the same square and rectangular brick formats of SU1; it slopes toward the east. SU1 and SU5 were connected, being thus parts of the same structure (Figs 6.56-6.57): the fifth row of the platform and the first preserved step of the stair are approximatively at the same level (997.570-997.560 m asl). The flat surface originally connecting the platform to the stair consisted of three squared bricks. It was damaged probably by

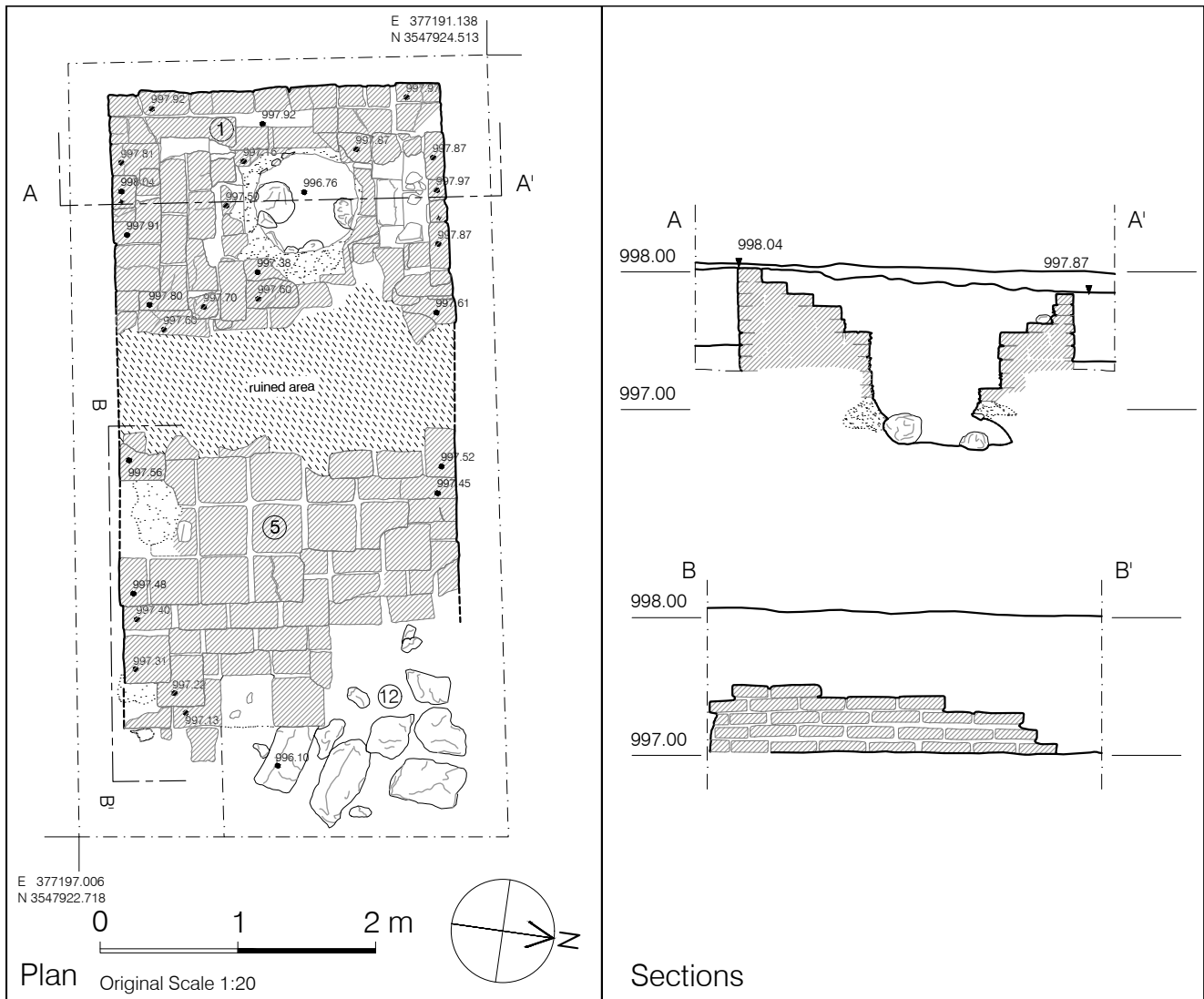


Figure 6.48 - Trench 3. Layout and section of the excavated area (scale 1:50)

the construction of the modern path and is now filled by many fragments of baked bricks mixed with stones of small and medium size (SU7) (Fig. 6.55).

Below the lowest preserved step, a layer of about 20 cm consisting of compact clay with green clay lumps and very small stone rubbles was identified (SU10, at 997.130 m asl). It shows the same characteristics of SU3. A very thin layer of pure and compact natural calcareous sediment (SU11) was reached below SU10; it covers an assemblage of medium size stones (SU12, top at 996.980 m asl) already recognized, approximately at the same elevation, through the hole dug in the platform centre. Here, the largest stone recovered measures 65 × 30 cm.

Two large layers (SU4 and 8), characterized by the presence of ashes, charcoals and fragments of burnt bricks, were recognised around the structure, particularly to the west, east and south sides: these can be maybe interpreted as the evidence of a partial destruction by fire of the structure itself, or as traces of a kind of ritual that was there performed. In these disturbed layers, several baked brick fragments were also found, among which five complete triangular bricks with a curved side that must be probably intended as column segments. The latter are of two sizes: the bigger measures 35 × 35 × 30 × 8 cm (35 being the radius), the smaller 32 × 32 × 29 × 6 cm (32 being the radius) (Fig. 6.58). It is unclear whether, and how, they were related to the structure. Similar bricks, probably used to build columns of six cloves (c. diam. 66 cm), were found by A. Stein in the so-called shrine discovered on the Upper



Figure 6.49 - Trench 3, SU 1 from the east



Figure 6.50 - Trench 3, SU 1 from the south



Figure 6.51 - Trench 3. SU 5 from the east



Figure 6.52 - Trench 3. SU 5 from the north



Figure 6.53 - Trench 3. Detail of a squared brick and brickwork seen from the hole in SU 1



Figure 6.54 - Trench 3. SU 6 below SU 1

Terrace: the findspot is marked with the letter 'g' in his plan (Fig. 1.4). These bricks have a radius of 33 cm, similar to that identified in Trench 3, and have been also interpreted as bases for wooden pillars.⁵¹ A fragment of such a brick module has been likewise discovered in Trench 1.⁵²

No archaeological materials were found except for few sherds scattered on surface: these are in common ware and could be generally dated to the Parthian period.⁵³

⁵¹ Stein 1940, 140.

⁵² Bucci et al. 2016, 76 -77, fig. 8.

⁵³ See chapter 7. Only a rim fragment is in Red Slip Ware, the others are all in Common Ware.



Figure 6.55 - Trench 3. SU 1 and SU 5 from the east

The purpose of the unearthed structure is uncertain, but it may be supposed that it was an altar, or a platform to support an altar, to which a worshipper could have been led by a low stair (Figs 6.53-6.54).⁵⁴ Stein brought to light a similar structure and identified it as an altar inside the so-called shrine.⁵⁵ It was composed by a platform and a floor (c. 108 × 62 cm) in baked bricks⁵⁶ (Fig. 1.5). The platform, measuring 170 × 115 cm and raising c. 90 cm from the presumed floor, was built with two brick formats: a square module measuring, 35.5 × 35.5 × 5 cm, and a rectangular module, 35.5 × 15.4 × 5 cm, identified mainly in the broken west part of the structure.⁵⁷ Another brick base (c. 71 × 61 cm) was found west of the platform and used as the support of a square stone base (c. 60 cm) with a recessed edge and a column drum (diam. 40 cm; h. 28 cm)⁵⁸ (Figs 6.59-6.60). It is evident that the structure found by Stein pairs the one found in Trench 3. To preserve the structure, Trench 3 was covered at the end of excavation.

Platforms and altars in baked bricks are at present still lacking in other excavated terraced sanctuaries, such as Bard-e Neshandeh and Majid-e Sulayman. This could be maybe related to different rituals performed at those sites or to practical building reasons, as the outcome of a supposed more widespread use of baked bricks at Kal-e Chendar. Both assumptions remain to be verified. Instead, altars made of baked bricks are more common in Mesopotamia, at sites where religious architectures

⁵⁴ The possibility that such a platform could support a statue cannot be completely ruled out, even if this seems far less probable than an altar given the presence of a stair.

⁵⁵ Stein 1940, 147 (structure b).

⁵⁶ Stein 1940, 145, pl. II (the latter named on his plan with the letter d).

⁵⁷ The bricks' dimension is similar to that employed for the structure in Trench 3, except for their thickness.

⁵⁸ Stein 1940, 147-148.

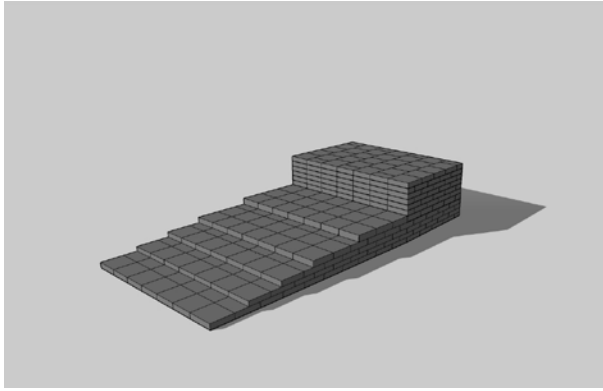


Figure 6.56 - Trench 3. 3D reconstruction of the platform/altar and stair seen from the north-east

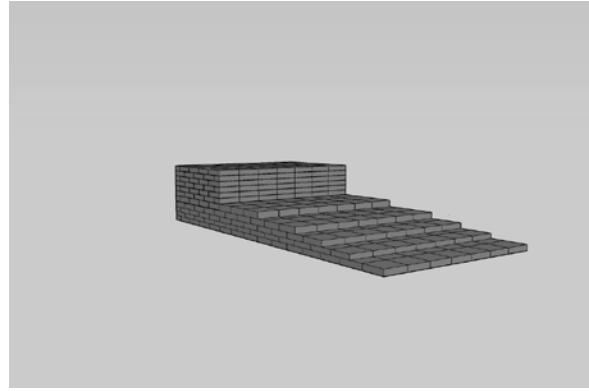


Figure 6.57 - Trench 3. 3D reconstruction of the platform/altar and stair seen from the south-east

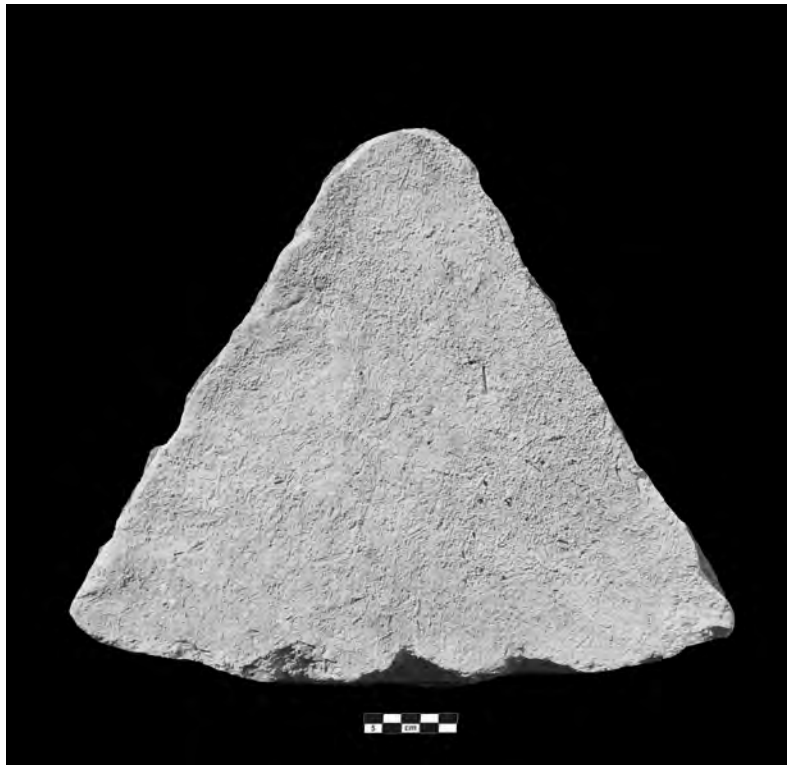


Figure 6.58 - Trench 3. Triangular baked brick with curved side

of Seleucid and Parthian dates have been discovered. The inner altar (1.30 × 1.20 m) found at the Temple of Gareus at Uruk, preserved for four rows of baked bricks in height, could be a good example of such a presence. According to the German excavators of the site, it is possible to reconstruct a platform with a low stairway on the front, similar to the structure of Trench 3.⁵⁹ A second rectangular baked brick altar (1.8 × 2.35 m) was cleared in court I of the Temple of Anu-Antum in Uruk;⁶⁰ this also shows similarities, for the building technique, with an altar discovered in the court of the so-called Heroon (level 2) of Seleucia on the Tigris.⁶¹ Moreover, two platforms made of baked bricks, probably used for ritual purposes, were also identified in the Hellenistic levels of court VII of the sanctuary of the E.Babbar at Larsa: the best preserved platform, square in plan (1 × 1 m), revealed at least nine rows of baked bricks.⁶² During the Hellenistic and Parthian periods, several shrines at Dura Europos

⁵⁹ Heinrich 1935, 33, taf. 12; Kose 1998, 320.

⁶⁰ Kose 1998, 154-155, abb. 85.

⁶¹ Hopkins 1972, 20, fig. 13.

⁶² Huot et al. 1987, 175-176, figs 14-15. During more ancient periods, rectangular platforms or altars built with the same materials are attested: Bachelot et al. 1983, 206, 216, fig. 9, 217, fig. 12.



Figure 6.59 - Trench 3. Stein and Karimi's excavation at Kal-e Chendar. In the foreground the brickwork 'b' (courtesy of the British Library)



Figure 6.60 - Trench 3. Stein and Karimi's excavation at Kal-e Chendar. Brickwork 'b' (courtesy of the British Library)

show the presence of baked brick platforms, sometimes including stones and plaster, with rectangular architectural altars placed on their top. These were built usually in the courtyard of temples, and it was possible to reach their top thanks to a high steep stair (as in the Temple of Zeus Megistos in period I), which differentiate them from the low baked bricks structures found at Kal-e Chendar.⁶³

⁶³ Downey 1986, 79, 81, fig. 33.

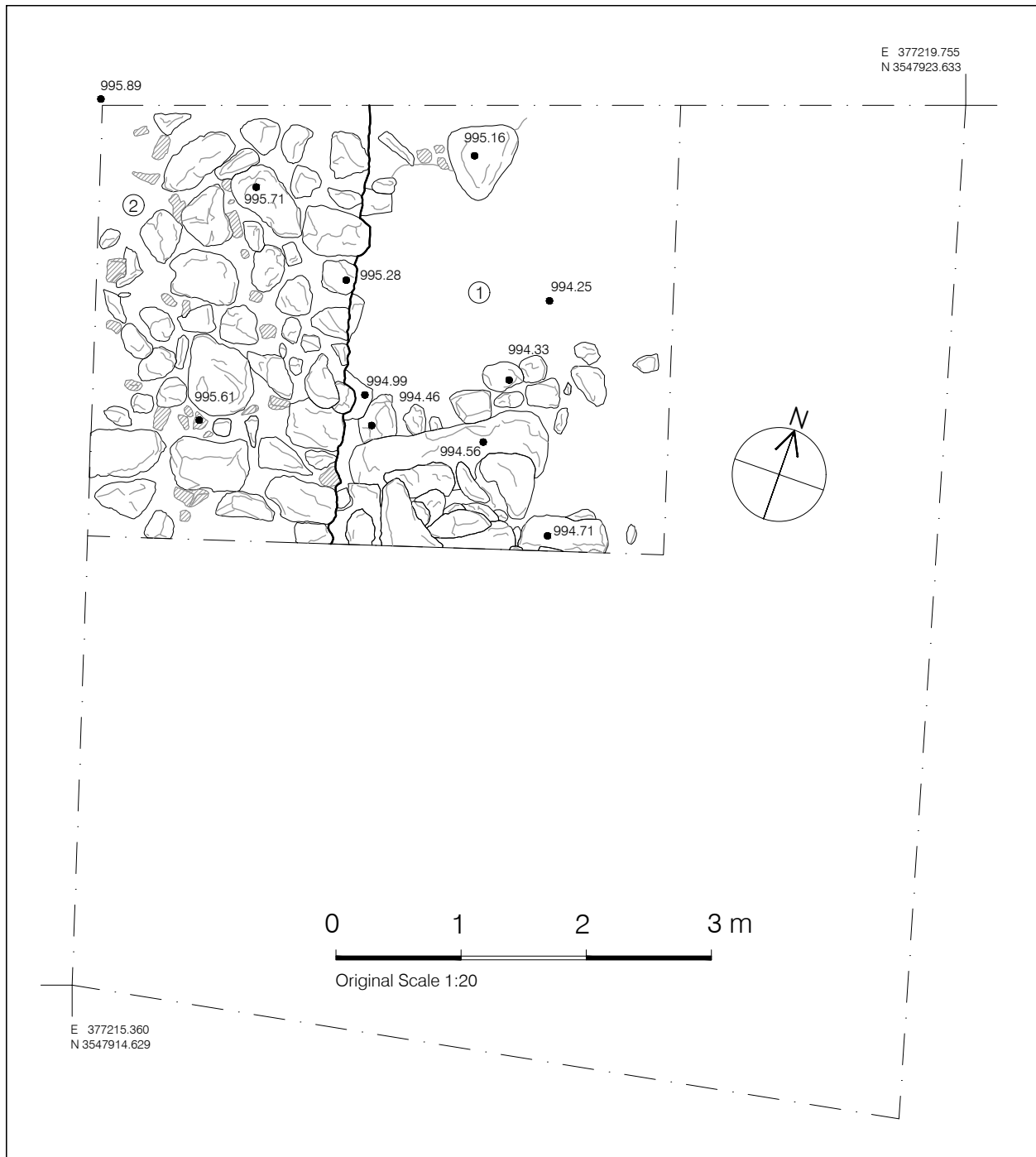


Figure 6.61 - Trench 7. Layout of the excavated area (scale 1:50)

6.4.2 Trench 7 (A. Cellerino, E. Foietta)

Trench 7 was opened less than 20 m east of Trench 3, close to the supposed north limit of Terrace 3. In that area, baked brick fragments were clearly visible on surface and the trench was opened to verify whether or not the presence of such fragments could have been related to buried structures, as the one discovered in Trench 3. In Trench 7 the surface layer, at an elevation of 994.483 m asl, was composed by rubbles and several brick fragments. The trench, a square of 7 × 7 m oriented to the north, was not entirely excavated. Only the surface layer was removed over the whole excavated area, for the trench was investigated in depth particularly in its north half (Figs 6.61-6.62).



Figure 6.62 - Trench 7. SU 2 from the east



Figure 6.63 - Trench 7. SU 2. Detail of a reused stone slab probably coming from a tombs' roof

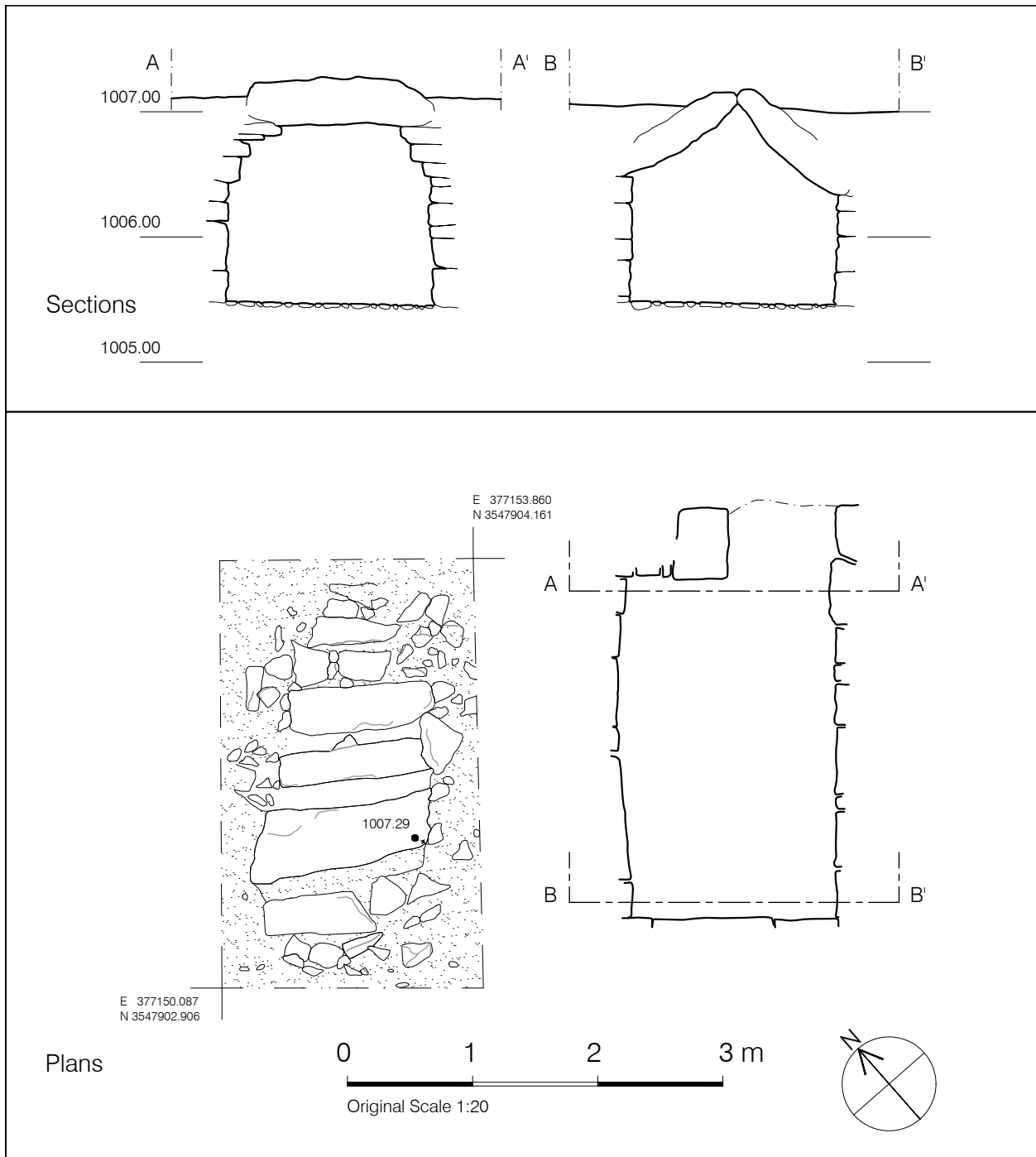


Figure 6.64 - Trench 11 (= T7). Layout of the underground chamber (scale 1:50)

A structure of unclear purpose (SU2) was discovered. It had foundations laid at about 2 m below the surface (992,843 m asl). Structure SU2 is made of big and medium-size stones, aligned on many rows, and filled by baked brick fragments mixed with soil and rubble. A big slab, east-west oriented, was found in the lower part of the structure, close to the south limit of the trench. Given its shape, it is possible to consider it as the ancient slab of a saddle roof tomb, here reused: such slabs are quite common at the site⁶⁴ (Fig. 6.63). The top of SU2 was reached at about 994.313 m asl, but brick fragments were found also in its lower courses. It is worthy of note that no potsherds were found in the layers connected with SU2, or close to it.

⁶⁴ See chapter 11 for the analysis of T7, T20 T23, T24, T26, T27 and T28.



Figure 6.65 - Trench 11 (= T7). Tomb's roof from the north

Given the extensive reuse of broken bricks and roof slabs, it can be assumed that it was built probably later than the structure discovered in Trench 3. No dating elements were found, however, so that precise chronological indications are lacking. The purpose of the structure is as well unclear. Given its north-south orientation, which follows in this point the natural slope of the ground, the possibility that this stones' alignment was built in modern times as a kind of retaining wall for cultivated fields cannot be ruled out completely. It is likewise unusual to have found the foundations of SU2 down to a depth of about 2 m from the present surface. The trench was covered at the end of fieldwork, and it was not possible to resume excavation in this point.⁶⁵

6.4.3 Trench 11 (= T7) (M. Faraji, E. Foietta, M. Rohuani Rankouhi)

The remains of a looted tomb, named T7, were found about 50 m west of Trench 3. Trench 11 was opened to clear the tomb. T7 is a rectangular underground chamber, roughly oriented to the east (Fig. 6.64). It measures about 1.60 × 2.60 m, being 1.40 m in deep. Undressed roughly cut stones have been laid at the grave's sides with the purpose of building the chamber's walls after ditching. Stones have different shape and size even if, as a rule, stones of bigger size are laid in the walls' lower courses. The chamber is covered by a combined roof, which has flat stones close to the chamber's entrance (at 1007.290 m asl) and stones laid in the shape of a saddle roof at the chamber's back (Fig. 6.65).

The tomb has been looted probably repeatedly over time, even if the most recent unauthorized activity must have happened not long before our excavation: the soil that still covered part of the roof appeared indeed recently excavated. The chamber, which could be entered through a small rectangular pit of 0.90×0.60 m, was empty (Fig. 6.66). Unlike other tombs excavated at the site (for instance T23, T26 and T28) T7 had no visible façade.

⁶⁵ Agricultural activities could not be stopped further on, at the request of the field's owner.



Figure 6.66 - Trench 11 (= T7). Interior of the funerary chamber

Very few bone's fragments have been found into the chamber, along with few funerary objects, discovered in very disturbed layers of filling and debris. Flat irregular stones were laid as a floor. Among the most interesting findings one can mention beads, a glazed plate (chapter 7, Fig. 7.26: no. 1) and a glazed pot (Fig. 7.31: no. 26), the fragments of iron blades (chapter 9, nos 60-61/SO06-SO07), a gold bead having the shape of a pomegranate (chapter 9, no. 11/SO10), and especially a bronze pin, decorated with an embracing couple revealing clear Hellenistic reminiscences (chapter 9, no. 35/SO16).

6.4.4 Trench 16 (= T20) (M. Faraji, M. Rohuani Rankouhi)

Trench 16 was opened in the place of a looted tomb, named T20. It is located about 125 m north of Trench 3, not far from the north stream in that point. The tomb is a rectangular underground chamber covered by a saddle roof (of which only two slabs remain), roughly oriented to the north and measuring about 1.50 × 3.60 m (it probably was about 1.40 m high). The roof has been almost completely destroyed by looters, along with the entrance and a large part of the small funerary chamber, to enter the tomb.

T20 is built with the same technique already described for T7 and it was likewise repeatedly looted over time (Fig. 6.67). Its archaeological context is heavily destroyed. We cannot say whether its façade was visible or not, but the latter possibility appears more probable than as it was ascertained for T7. The interior was disturbed by several recent unauthorized excavations (Figs 6.68-6.69). T20 is the only excavated tomb that revealed traces of inhumation up to now: about thirty complete, or

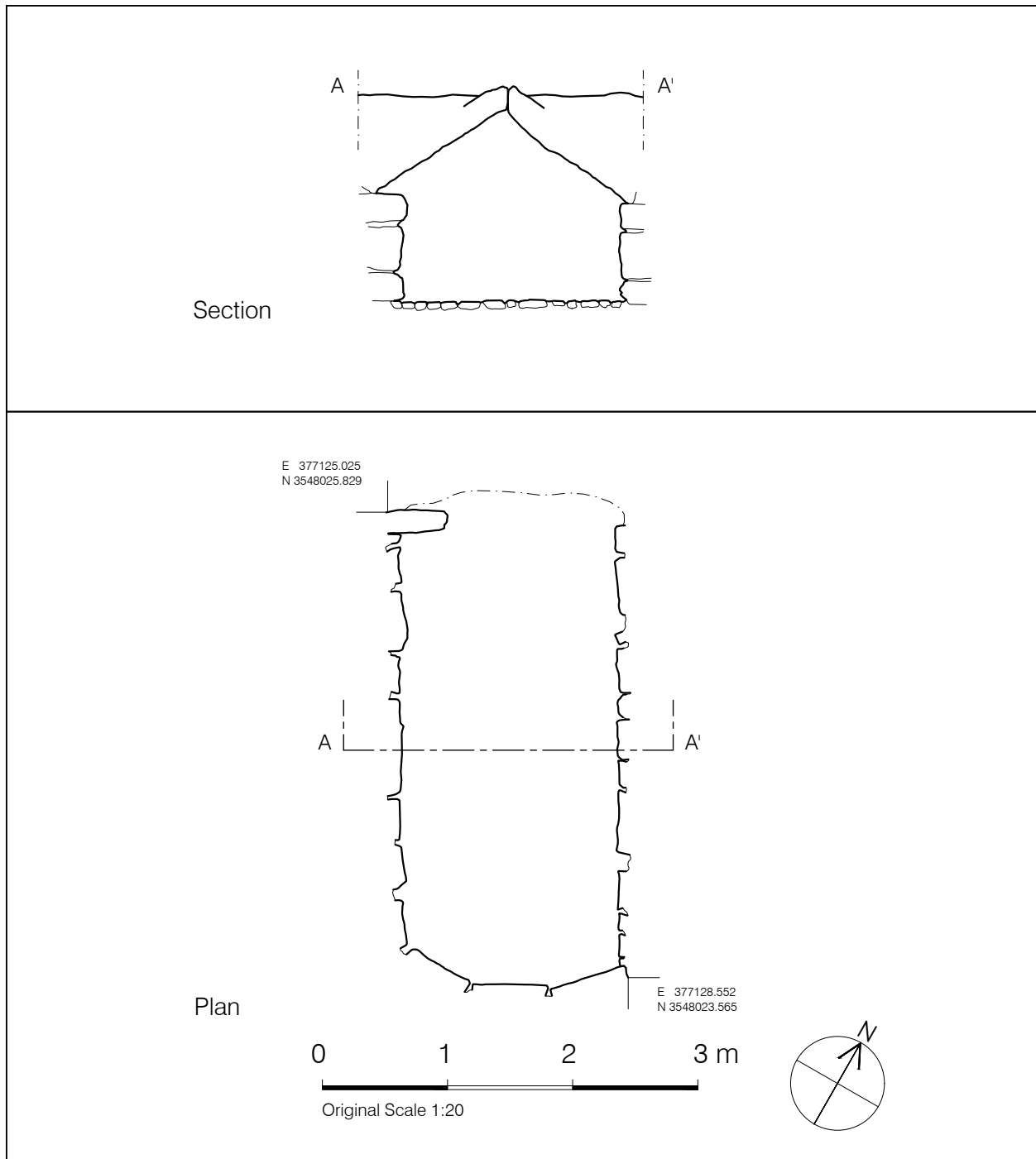


Figure 6.67 - Trench 16 (= T20). Layout of the funerary chamber (scale 1:50)

almost complete, human bones and more than 350 bone fragments were found. Looting activities, repeated over time, have left human bones incoherently mixed. This hindered the reconstruction of human bodies: however, the remains of at least three individuals can be recognized based on some distinguishable bones.⁶⁶

⁶⁶ Of basic importance for the identification of at least 3 individuals was the discovery of six complete or almost complete femurs (13 fragments). Along with them, we also recognized four tibiae (14 fragments), two fibulae (9 fragments), 2 coxae (4 fragments), four humeri (11 fragments), three ulnae or radii (16 fragments), four clavicles (4 fragments), one sternum, 3 fragments of scapulae, four patellae, 45 fragments of rib, 54 fragments of vertebrae, 2 fragments of sacra, 64 fragments of parietal bones, 5 fragments of mandible, 2 molars, 3 premolars, 2 incisors, 83 fragments of phalanxes (of hands or feet), 26 fragments of feet bones, and numerous unclassified bone fragments.



Figure 6.68 - Trench 16 (= T20). Interior of the funerary chamber from the south



Figure 6.69 - Trench 16 (= T20). Interior of the funerary chamber from the north



Figure 6.70a, b - North Terrace. Aerial photos taken from UAV

The precarious state of the remaining part of the roof induced the co-directors to enter the tomb through its north side, for it was too dangerous to remove the residual roof's slabs. Along with a set of vessels (chapter 7, Fig. 7.26: no. 4; Fig. 7.27: no. 13; Fig. 7.33: no. 52; Fig. 7.34: no. 59) and potsherds, only two small bronze rings were found in the chamber (chapter 9, no. 30, 32/SO38, SO56).

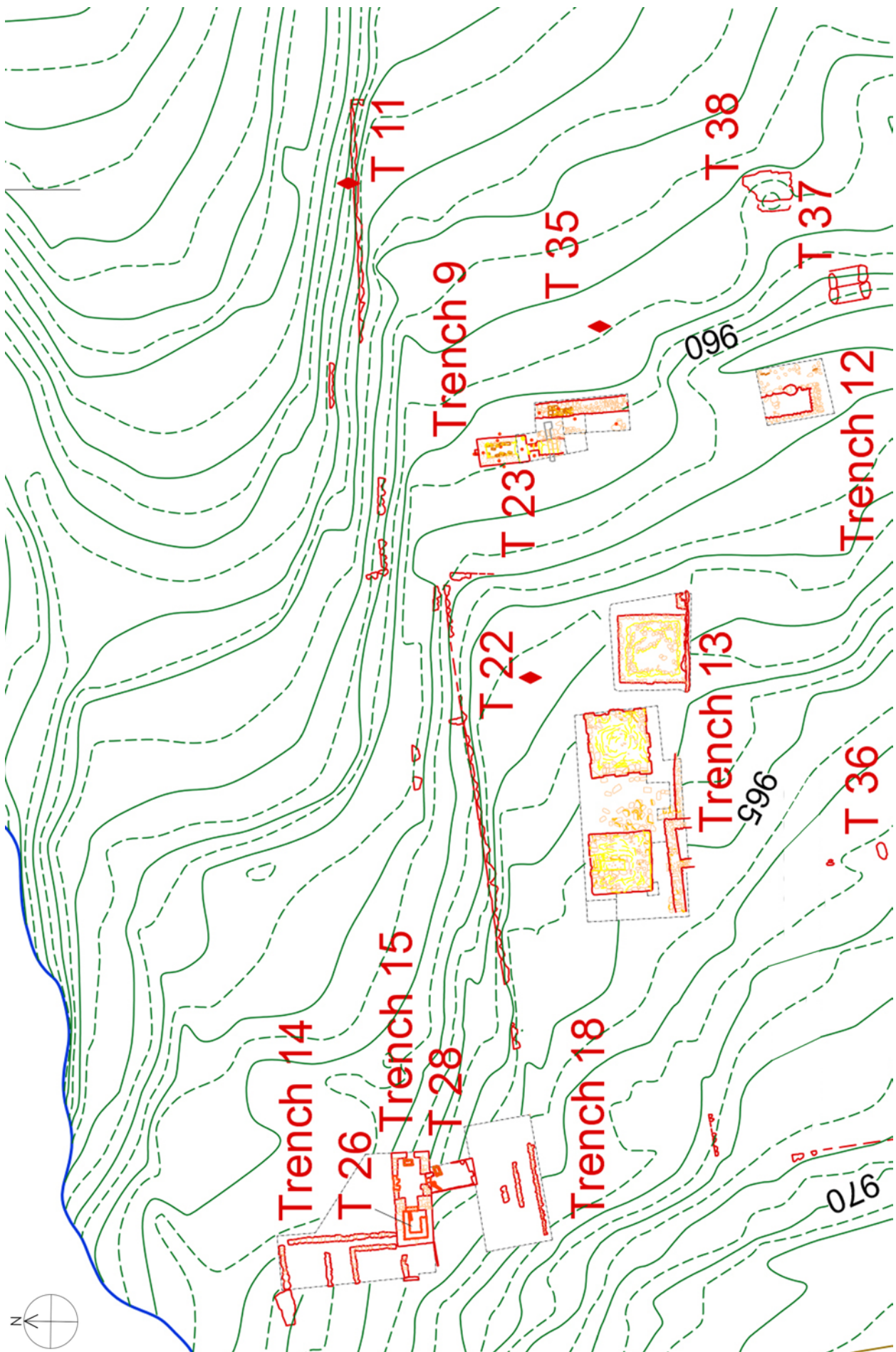


Figure 6.71 - Layout of the area of the North Terrace (scale 1:500)

6.5 The North Terrace (J. Mehr Kian, V. Messina)

The North Terrace is the northernmost terrace identified by our survey (Figs. 6.70a, b, 6.71).⁶⁷ It overlooks the north stream, and it roughly follows its course, as its north retaining wall –the only feature of the terrace still well visible– was adapted to the natural ground conformation: the latter is characterized by a crest of terrain almost parallel to the now exhausted streambed. The North Terrace could have been indeed the westernmost structure in a series of three subsequent terraces developing eastward, toward the Rud-e Shami. Such a series seems to have allowed the regularization of the terrain slope over a wide area, ranging in this point from 970 to 950 m asl. Over and around the terraces, several tombs have been identified and partly excavated: these are only a part of the tombs yet to be discovered in the area. However, the most interesting structures, unearthed in Trench 13, stood in ruin on the North Terrace itself.

The terrace's size can hardly be estimated, as only one of its four retaining walls is visible overground. This wall is built following the usual technique: if one considers its length (c. 60 m) along with the layout of other terraces at the site (as a rule, roughly square or wide rectangular in shape), a surface ranging from 3,600 to 4,000 m² can be deemed. Such an extension would qualify the North Terrace as the smallest so far recognized. If one rather considers the three terraces together, such an extension would be more than double, thus making this series as the most extended regularized surface of the site. We particularly focused on the North Terrace because during ground survey our attention was drawn by some surface anomalies and the presence of a tombs' cluster (T23, T35, T37, T38). Our fieldwork confirmed the relevance of the structures on the terrace and allowed us to find another tombs' cluster (T26, T28), of the highest interest, at the terrace's north feet. Given the relevance of this area, we opened six trenches on and around the North Terrace (Trenches 9, 12, 13, 14, 15 and 18).

Basing on the results of our excavations it may be put forward that the North Terrace has been built to support funerary monuments (Platforms 1-3) and other buildings that remain largely unknown (a further platform is likely located at the terrace's west corner, while a roomed building extends just south of Platform 1); the terrace was a focus point of the cemetery, because tombs seem to have been purposely placed around it (Fig. 6.71). Such an arrangement clearly shows that tombs were embodied in funerary complexes and linked each other by paths and stepped corridors.

The North Terrace seems indeed the highest and culminating point of a complex that included the tombs we recognized and, almost surely, other yet unidentified clusters. The terrace was accessible from the area of the north stream through a stairway discovered in one of our trenches (Trench 18). Such a stairway (Fig. 6.72) can be compared for its function to the monumental stairways of other Elymaean terraced sanctuaries, although it seems far smaller, and it could have linked the tombs located close to the streambed (T26 and T28 in Trenches 14 and 15) to the funerary monuments on the terrace's top (Platforms 1-3 in Trench 13). Another cluster of tombs further to the east (of which only T23 in Trench 9 and Trench 12 have been investigated) deserves particular attention, as it seems to show that in some cases the space of tombs could have been delimited by wall enclosures. In addition, the excavated tombs clearly reveal that they were semi-underground structures, as their façades were made to be clearly seen from the exterior and were thus left open to the sky. The funerary platforms on the North Terrace, the presence of cult objects in proximity of some tombs (T26 and T28), and the traces of animal sacrifices (T23) clearly show that funerary (?) rituals were performed in such a complex.

6.5.1 Trench 13 (M. Homayoon, J. Mehr Kian, V. Messina)

Trench 13 was opened at the north limit of the North Terrace. In this area, surface anomalies had been already recognized during our survey at the site. Observation of ground conformation, made on satellite imagery, allowed us to postulate the presence of buried structures and such an assumption was confirmed by observation made and on the field: a large and clearly visible stone assemblage

⁶⁷ The presence of other terraces further to the north, beyond the limits of the surveyed colluvial fan, cannot be ruled out.



Figure 6.72 - North Terrace. Stairway from the north



Figure 6.73 - North Terrace. Stone assemblage from the north



Figure 6.74 - North Terrace. Aerial photo taken from UAV. Trenches 13 (Platforms 1-3), 14, 15 and 18

particularly drew our attention (Fig. 6.73), as it appeared purposely positioned in that place (evidently in modern times) to cover (and hide) a quite extended surface of more than 300 m². The reason why such a surface had been covered became evident after the removal of the stone assemblage.

Among a huge amount of irregular loose stones, few well-cut and polished stone blocks, emerging in one point of the assemblage itself, looked in their original position and seemed to delimitate the corner of a structure. This induced us to remove loose stones to verify such a context. Once loose stones were removed, our impression was confirmed by the finding of a squared structure, of which we were initially able to identify the south-west corner. Such a structure (Platform 1) was only the first of a series of four there identified: three have been excavated, one demand further investigation. Loose stones had been thus assembled in this area to cover ancient platforms still partially standing (in ruin) overground; these were covered by villagers to avoid agricultural activities in that point.

The four platforms are roughly aligned along the terrace's north limit, thus following, with slight differences, a west-east disposition (Figs 6.74-6.75). Three of them (Platforms 1-3) are grouped to form a kind of cluster toward the terrace's north-east corner: these have been excavated. One is placed, rather isolated and still unexplored,⁶⁸ toward the terrace's north-west corner, about 12 m afar from Platform 1, close to a stairway unearthed in Trench 18, which gave access to the terrace's top from the north.

The area initially exposed measured 20 × 9.5 m: in this area we discovered two platforms (Platforms 1 and 2). The excavation limits were further widened toward the east to discover the third platform

⁶⁸ Here, an area of at least 50 m² deserves particular interest because a further stone assemblage probably conceals another squared platform, apparently the biggest of the four.

(Platform 3).⁶⁹ As a rule, the platforms' perimeter is very well defined, with one of the four sides quite precisely north-oriented. Platforms have been built following the same technique, with undressed stones carefully placed to delimit the perimeter walls, and to retain a filling layer of loose earth mixed with rubble. In the end, it is the same technique used, on a much larger scale, to build the monumental terraces of the site. Some differences between the platforms can likewise be seen, however, in their making, layout and, likely, function. Two of the excavated platforms could have been in relation with a further structure: this is a roomed building that we have identified only to a very limited extent at the south excavation limit, but we were unable to further investigate.⁷⁰ The platforms were not covered at the end of fieldwork: to protect the unearthened structures, some of the loose stones belonging to the assemblage that originally concealed them were arranged along the perimeter of the ancient features. It is worthy of mention that almost no archaeological materials were found in Trench 13.

Platform 1

Platform 1 (Figs 6.76-6.79), the westernmost of the excavated platforms, measures 5.8 × 5.8 m and it still emerges for about 80-90 cm from the present ground: its present top surface is preserved at 966.29 m asl at the highest point, and it seems reasonable to think that it originally was not much higher than this. Nothing remains today of the original top surface, but one can postulate that it could have been covered of regular stones, later removed to be reused. We can confidently suppose that the original top surface stood at nearly 1 m from the ground. The platform was built on foundations laid at 964.70 m asl, about 70-80 cm below the present topsoil. Foundations, exposed in a sounding opened at the platform's north-west corner, have been built in huge, undressed stone blocks (SU7). Such blocks, well-cut and of regular shape, can measure up to 1.6 × 0.6 × 0.8 m and have been very carefully arranged on a single row to protrude from the platform's perimeter walls for about 10 to 20 cm. The foundation's protruding part was covered by the topsoil: this leads one to think that the present and ancient ground levels nearly correspond, or highly approximate.

Over these huge foundations –a type unattested in other structures discovered at the site– four retaining walls (SU1-SU4) were built to retain the filling layer already described (SU5): such a filling is the core of the platform. Retaining walls have been made following the usual technique: undressed stones of various size, but here generally of regular shape, have been arranged in one course and at least three rows.⁷¹ Three corners of the perimeter are preserved, as the north-west corner was probably broken when the stone assemblage there placed to cover the platforms was put together (the south-west corner is at 966.289 m asl, the south-east corner at 965.749 m asl, the north-east corner at 965.379 m asl); the preserved corners allow us to see that the four walls were joint together and that the platform's east side is 50 cm lower than the west one. The latter phenomenon is due to the partial collapse –or disassembly (?)– of the east retaining wall (SU3), whose debris (SU13) was found at the platform's feet. Unlike the stones used elsewhere at the site, those used for the platforms' retaining walls are well-cut. Particularly the stones laid in the lower rows follow this trend; those laid in the upper rows can be also more roughly cut, but this seems quite rare and it could be the result of restorations or maintenance activities. The measure of stones laid in the retaining walls vary, but a standard of about 50 × 25 × 30 cm seems to occur as a trend. When the care characterizing stonemasonry is taken into consideration, it seems possible to assume that the outer sides of the retaining walls, as we see them today, correspond to the platform's façades.

On the platform's north side, a recess (SU6) had been opened into the retaining wall SU4 to notch the platform core (SU5) beyond its center (Fig. 6.80): such a recess, measuring 3.2 m in length and 80 cm in width, extends southward and contains today loose earth and stone fragments incoherently mixed. It must have been originally arranged in a different way, however: at the recess' north limit, on the same alignment of wall SU4, two flat stones were found close to the ground that were still in their original

⁶⁹ Platform 3, the easternmost one, has been excavated and documented by the Iranian team only, during fieldwork conducted independently and beyond the joint schedule.

⁷⁰ Our intention to widen the trench further to the south had to face the problem of agricultural land catching. The trench couldn't be widened for this reason.

⁷¹ No more than three rows are preserved: it is hard to figure that they could have been more than four.

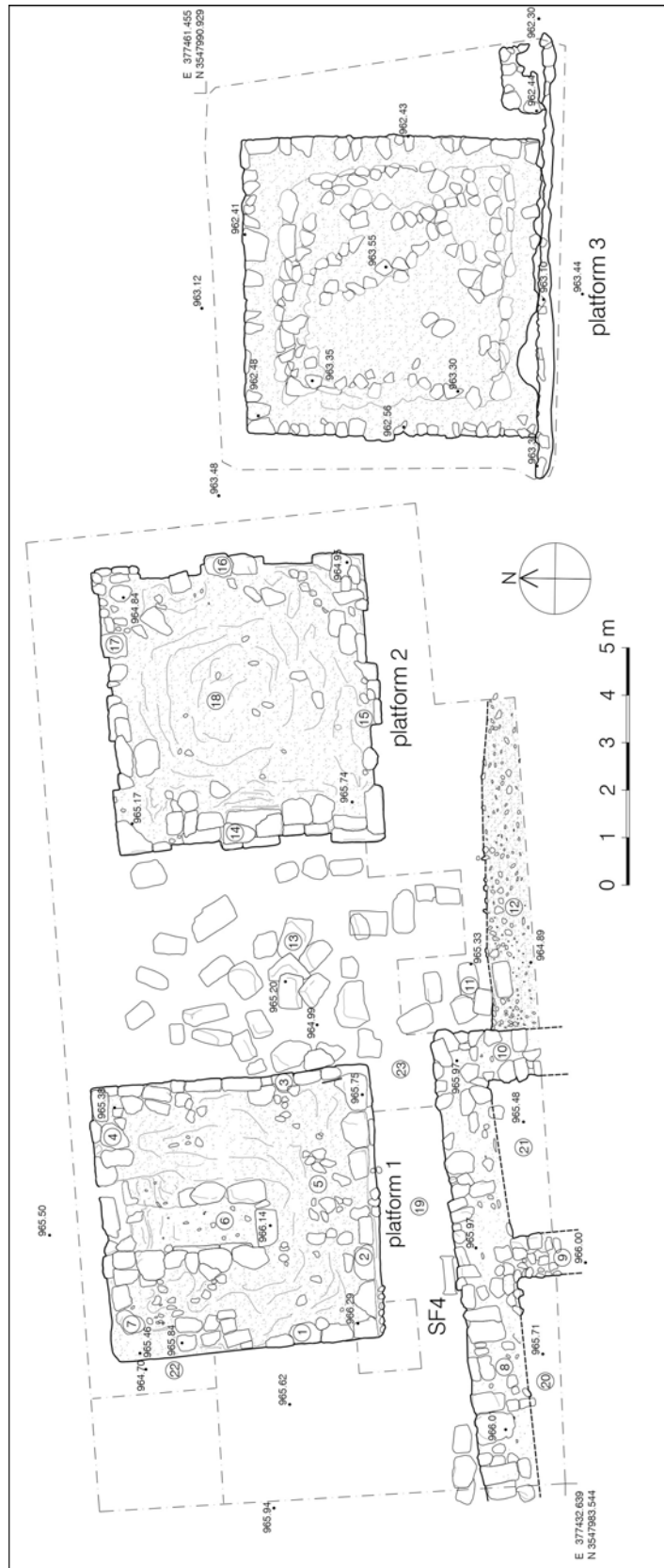


Figure 6.75 - Trench 13. Layout of the excavated area (scale 1:150)

position. Such stones were staggered one over the other on their flat sides to create what seemed to us, in all evidence, the two lower steps of a small stair, later dismantled, when the platform was not in use anymore, to retrieve useful well-cut stones. If this interpretation is correct, the recess embodied a stair that, from the platform's north side, allowed a user to reach the platform's top at its center: basing on the two stones found, treads could have been each c. 30 cm deep and rise for c. 10-15 cm, but the fact that they could also have had irregular sizes cannot be excluded. It is unlikely that such a stair could develop more than it is still visible today, as it already surpasses the platform's center in length and could hardly have reached a point higher than that it reaches at present: such a point is likely the maximum height allowed by the stair, and this further corroborates our assumption regarding the correspondence (or very high approximation) between the original platform's top and the present surface.

Platform 2

Platform 2 (Figs. 6-81-6.85), slightly smaller than Platform 1, measures 5.3 × 5.2 m and is located 5.6 m further to the east, at the center of the excavated cluster. It probably emerged for about 1 m from the ancient ground, as the preceding, and its top surface is preserved at an elevation of 965.74 m asl at the highest point (corresponding to the platform's south-west corner). One can postulate that –as also deduced for Platform 1– the original top surface was not much higher. The foundations, laid at 964.64 m asl and protruding for about 30 cm from the platform's perimeter walls, have been made of regular stone blocks (each measuring c. 30 × 30 × 20 cm), laid in one course and on a single row. As already seen for Platform 1, the foundations were covered by the topsoil.

Platform 2's perimeter walls (SU14-SU17) are articulated in small, indented niches: this pattern is peculiar of this platform and leads one to assume that the outer sides of retaining walls as we see them today correspond to the ancient platform's façades. Each wall has two niches c. 1 m long, alternating with three pilasters roughly of the same length. Indentations measure from 15 to 20 cm in depth. The building technique is the same attested in the previous platform: walls SU14-SU17 were built to retain a filling of loose earth mixed with rubble (SU18). Stones were laid in one course (in some point, doubled to strengthen the perimeter) and on three rows. However, the stones used to build the retaining walls of Platform 2 are slightly smaller than the preceding as a rule. This was probably due to the need to articulate the walls in niches and pilasters, an operation that could be easily performed using smaller stones.

Unlike the former, Platform 2 did not reveal the presence of stairs or other facilities allowing a user to reach its top surface. As the former, the east side is preserved at a lower elevation than the west one. In this case, the disassembly of part of the east wall to retrieve well-cut stones is more evident, as there is no stone debris but rather the sliding of the filling layer especially toward the platform's south-east corner. It is evident that, once the stones originally placed to retain the platform's core were removed to be reused, the filling they contained slid down.

Platform 3

Platform 3, the biggest and easternmost platform of the excavated cluster, measures 6.3 × 6.3 m (Figs. 6.86-6.90). It is located c. 2 m east of Platform 2 and it is still preserved for more than 1 m in height. The platform was not excavated down to the foundation level; however, it may be supposed that it could have emerged at least for about 1.5 m from the ancient ground. The preserved top surface was identified at an elevation of 963.55 m asl, below more than 1 m of loose stones, which belonged to the stone assemblage covering the whole area. The lowest row of the platform's walls identified by excavation (SU3902)⁷² was laid at 962.41 m asl. Few centimeters below such a row, traces of what is probably the remain of a floor, made of flat stones laid against the wall, were found on the platform's east side.

⁷² The Iranian team excavating Platform 3 decided to list stratigraphic units according to a system that differs from the one followed jointly.

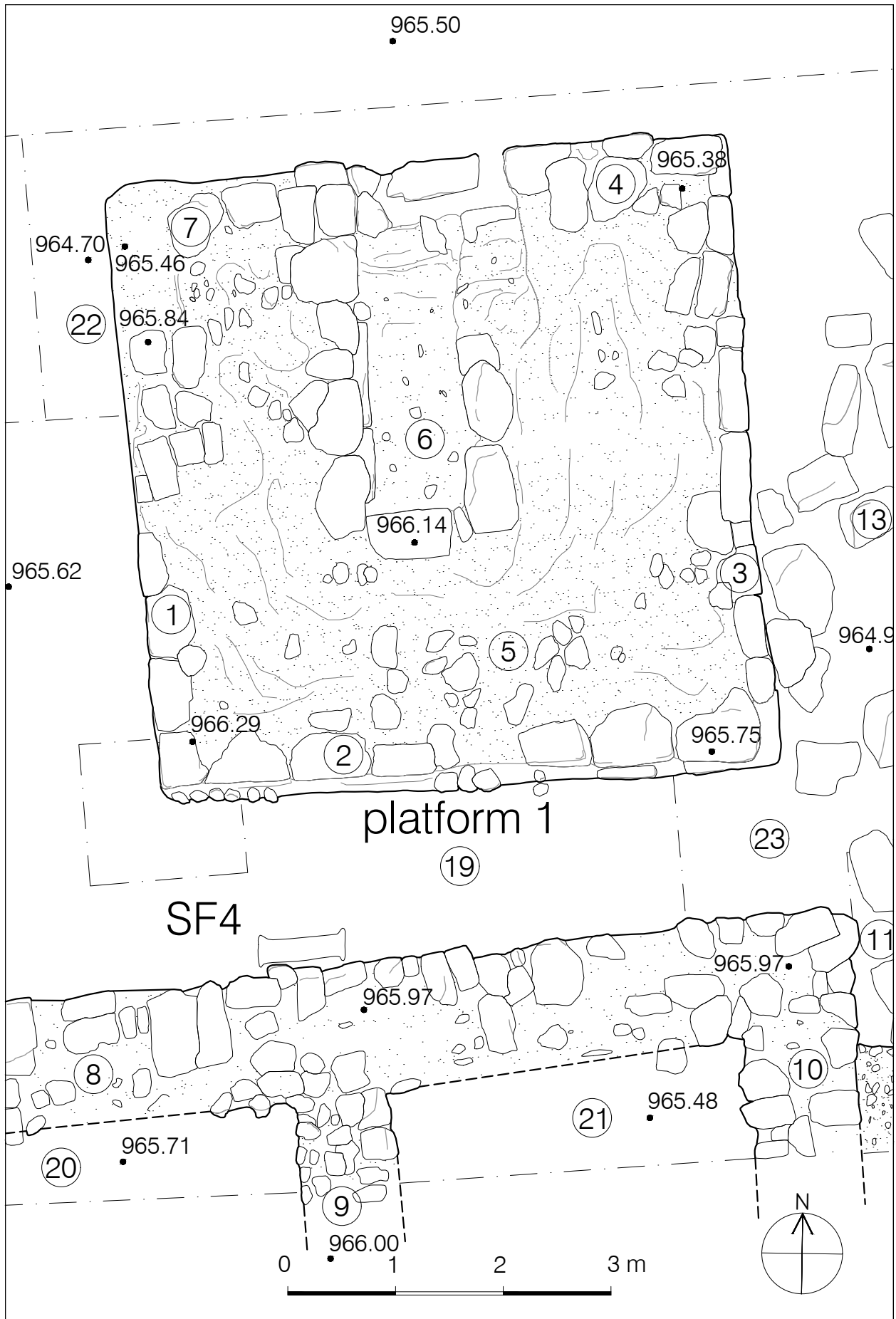


Figure 6.76 - Trench 13. Layout of Platform 1 (scale 1:50)



Figure 6.77 - Trench 13. Platform 1 from the west



Figure 6.78 - Trench 13. Platform 1 from the northwest



Figure 6.79 - Trench 13. Platform 1 from the south



Figure 6.80 - Trench 13. Platform 1. Recess on the north side

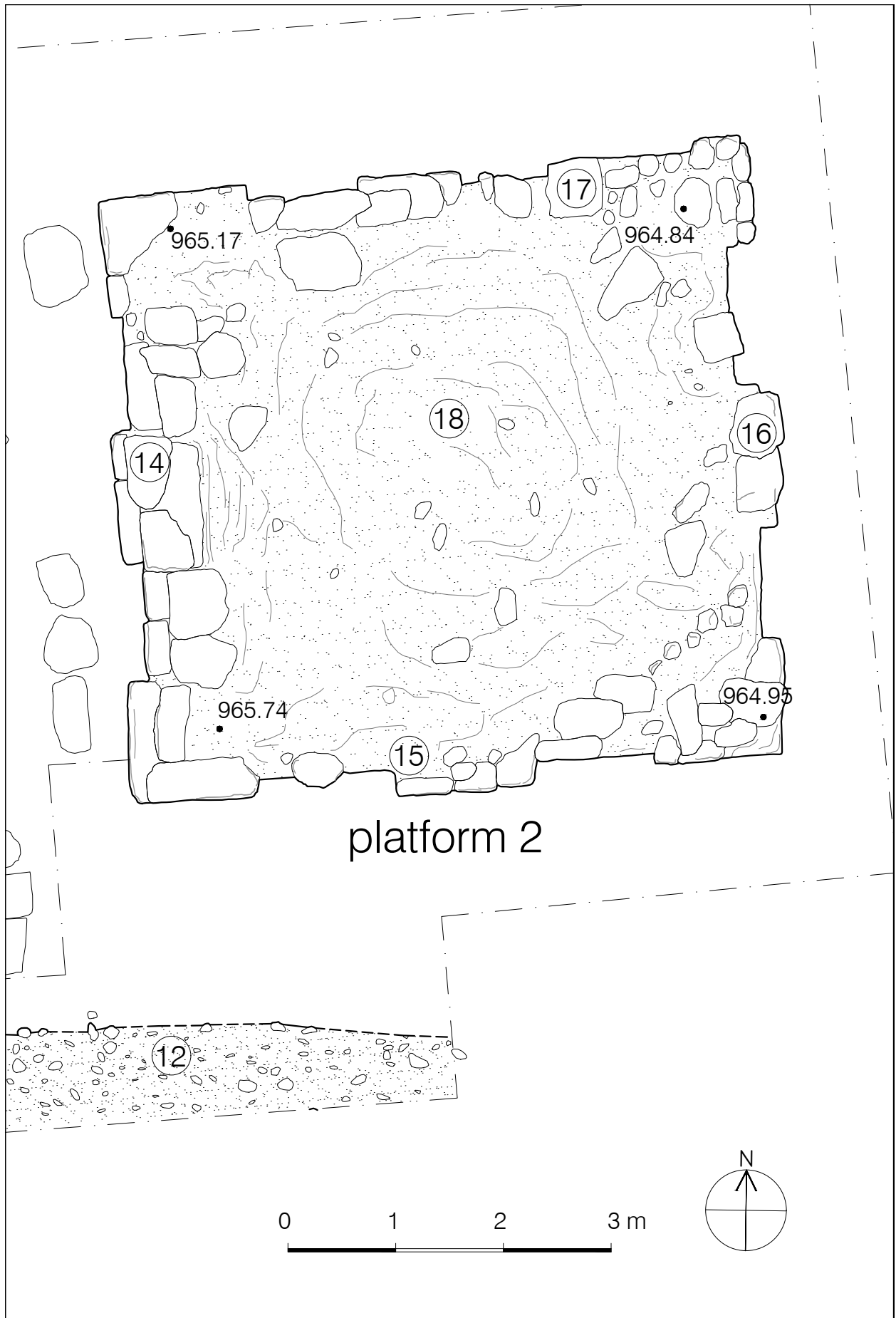


Figure 6.81 - Trench 13. Layout of Platform 2 (scale 1:50)



Figure 6.82 - Trench 13. Platform 2 from the northwest



Figure 6.83 - Trench 13. Platform 2 from the south



Figure 6.84 - Trench 13. Platform 2 from the east



Figure 6.85 - Trench 13. Platform 2. Detail of indented niche

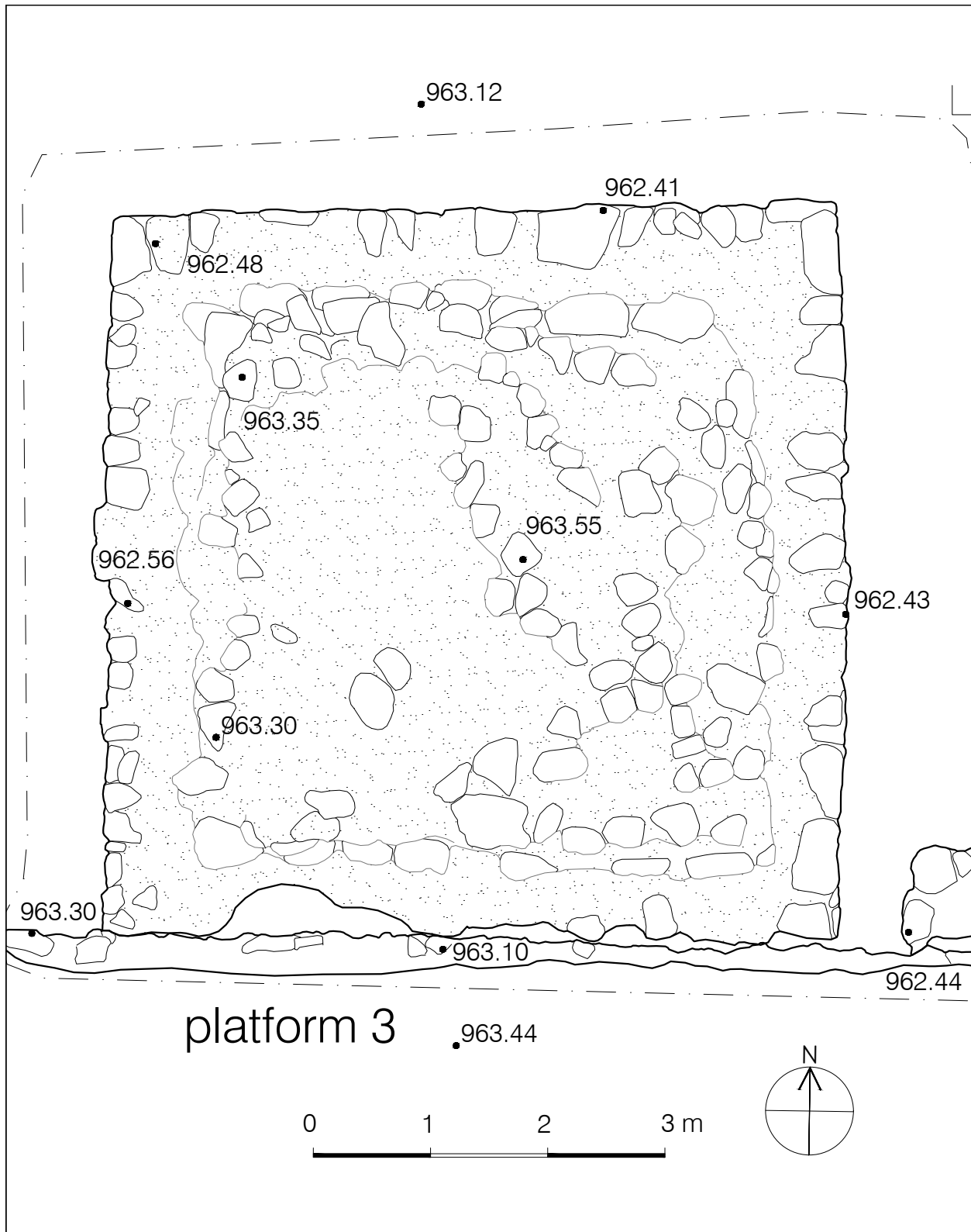


Figure 6.86 - Trench 13. Layout of Platform 3 (scale 1:50)

This is worthy of note, as it shows that Platform 3 was built at a level deeper than Platforms 1 and 2: the lower course of Platform 3 is more than 1 m deeper than the lower courses of Platform 2 and, given that the two platforms are only 2 m apart, this does not seem to be related to the fact that the ground naturally slopes down toward the east. It may be rather postulated that Platform 3 is more ancient than the other two excavated platforms: Platforms 1 and 2 could have been built after the ground was



Figure 6.87 - Trench 13. Platform 3 from the southwest



Figure 6.88 - Trench 13. Platform 3 from the northwest



Figure 6.89 - Trench 13. Platform 3 from the northeast



Figure 6.90 - Trench 13. Platform 3. Aerial photo taken from UAV

risen to make it more regular.⁷³ In addition, Platform 3 is not perfectly aligned with the other two: its north side is c. 2 m south of the north sides of Platforms 1 and 2 and even its orientation is slightly different, although it basically follows the same axis.

Platform 3 differs from the other platforms also for its conformation: though based on the same square layout, it is indeed a stepped platform. Basing on its ruins, one can postulate the existence of at least three steps receding from the base to the top. Each step receded inward for about 70 cm, so that the upper step offers a surface of 3.5 × 3.5 m. The lower step was only few centimeters high, the middle one was probably about 80 cm high, the upper one cannot be estimated (but it may be supposed that it was less high than the middle one). Large part of the lower step is covered by the middle one, but it seems that it was made of a unique row and unique course of flat regular stones. The middle and upper steps were built following the usual technique of a filling layer (SU3908), in this case containing a higher quantity of stones and rubble, retained by perimeter walls (SU3902, SU3904, SU3904, SU3905), made of regular stones. Traces of gypsum were found between some stones: whether this is an attempt to bind the stones in the masonry or not it remains unclear due to the scanty occurrence. As in the other platforms, stones laid on the outer sides of the walls are more regular than those used in the platform's filling (or core).

South Structures

South of Platform 1, less than 2 m afar, the walls of a roomed building were discovered at an elevation of 965.97-966.01 m asl (Figs 6.75, 6.91-6.93). The unearthed walls, recognized only to a very limited extent, develop beyond the west and south excavation limits, and demand further investigation. The main wall identified up to now (SU8) is east-west oriented and measures more than 8 m in length and about 1 m in width. Two orthogonal walls (SU9 and SU10), almost of the same width, are joined to the former to develop southward. At least two rooms can be thus identified, one (probably smaller) is about 3 m wide, the other is not yet measurable.

All walls are made following the well-known technique of laying undressed stones of various size in the wall's masonry: roughly cut stones are generally used, but in wall SU8 also bigger squared stones, here probably re-used after having been retrieved from other more ancient structures, can be seen. Close to the outer limit of wall SU8 a stone betyl or stand (no. 79/SO101) was found that probably came from the context of Platform 1. The betyl was in a layer (SU19) that leaned on the south wall of Platform 1 (SU2) but was cut by wall SU8. This allows us to postulate that the roomed building was built later than Platform 1.

East of the roomed building, a layer of pebble and rubble (SU12), emerging at 964.89 m asl and cut by wall SU10, can be probably interpreted as what remains of a pre-existing floor or the foundation of a pre-existing structure. It was exposed for a very limited extent, however, so that nothing can be added at present.

Interpretation of the structures unearthed in Trench 13

The platforms unearthed in Trench 13 must be seen as parts of the same complex because of their arrangement, disposition and similar features. However, they also reveal differences that appear related to the specific purpose for which each of them was built. With this regard, especially Platform 1 seems to differ from the others, as its function cannot be separated from its main feature: an indented stair that allowed users to step on its top in particular circumstances. Given their location and archaeological context, as they are surrounded by clusters of tombs, it is logical to define them as funerary monuments. Given their bad state of preservation and almost total lack of archaeological materials, their specific function is hardly understandable basing on intrinsic data. For the same reason, it is impossible to propose a date (or even a timespan) for their building, as only a relative

⁷³ Contour lines derived by our topographic survey allow us to see that on the North Terrace the ground's slope toward the east can be measured on a difference of about 3 m over a distance of 35 m, with a gradient of 5°. The difference of 1 m over a distance of 2 m (as it happens between Platforms 2 and 3) reveals instead a gradient of 25°, which is patently incoherent with the natural ground slope.



Figure 6.91 - Trench 13. South Structures. Wall SU8 from the west



Figure 6.92 - Trench 13. South Structures. Wall SU8 from the east



Figure 6.93 - Trench 13. South Structures. Detail of a betyl or stand found close to the wall SU8

chronology can be proposed basing on their stratigraphic correlation: it is quite probable that Platform 3 preceded the construction of Platforms 1 and 2 and that the roomed building extending southwards was built later. To this it must be also added that, at the decision of both co-directors, none of the unearthed platforms was cut by test-trenches to investigate their core, or partially dismantled to reach deeper archaeological layers (if any). This was done to meet the understandable request made by Iranian authorities to preserve the integrity of the exposed structures. However, basic features of our platforms can be observed in structures belonging to funerary contexts roughly datable to the same period of presumed use of the Kal-e Chendar cemetery, at least spanning from the 2nd century BCE to the 2nd century CE if one looks at other records recovered at the site. The examination of similar structures in other sites may thus enhance the comprehension of our platforms.

Platform-like stone structures having basically a square layout and rising overground as parallelepipeds can be found in different cemeteries or necropoleis of the Hellenising world, especially in Asia Minor, Syria and the Levant as far as the ancient Near East is concerned, that is to say Transeuphratene. They can be dated from the Hellenistic period (post 4th century BCE) to the Roman empire (2nd-3rd century CE), although occurrences dated to the BCE centuries are less documented than those dated to the CE centuries, but they evidently derive from more ancient prototypes, dating back to Satrapal times. Although they generally share some characteristics that can be also found in the platforms on the North Terrace, such as a relatively small size (as a rule hardly reaching 10 m per side, but often quite smaller) and cubic proportion, they could be built for different purposes. In the end, they are visually quite similar, as they are the outcome of trends developed globally and diffused in the many localities of the oikumene, but such a visual similarity can hinder their interpretation when some data are lacking, because of their different contexts of use.

Stone platforms could have been built to be 1) overground substructures, namely constructions meant to support other buildings or structures (usually sarcophagi or small elevated architectures),

2) overground funerary markers, constructions meant to make perceptible a hidden funerary context (often, underground burials), or 3) overground tombs, constructions that contained burials themselves. The latter two types seem far less frequent than overground substructures basing on the known documents. As it will be shown by some examples listed below, similarities in the general layout, size and proportion of these funerary structures with our platforms can be clearly seen; it is worthy of mention, however, that the building technique is patently different, as comparanda from Transeuphratene are made of ashlar rather than of undressed roughly cut stones. This is understandable when considering that building techniques are a marker of local traditions and an indicator of the process of receptivity that led to progressively embed global trends in local habits.

One of the most frequent types of overground substructures in cemeteries is represented by funerary podia (or pedestal tombs). This is a type quite diffused in the Roman world, well documented in Asia Minor, Syria, and Phoenicia. Podia are built to support stone monumental sarcophagi (in various number) and are generally dated to the 1st-2nd century CE (with some later occurrences of the 3rd century). Their layout is basically squared, and they have dimensions and proportions comparable to the platforms unearthed in Trench 13. Usually quadrangular, they can also be stepped, although the last type seems less frequent. Funerary podia can be found in several sites of Asia Minor, such as Sidyma in Lycia, Termessos in Pisidia and Aphrodisias in Caria, and they are usually interpreted as an evolution of more ancient models datable from the 6th to the 4th century BCE.⁷⁴ Asia Minor occurrences share with the platforms of Kal-e Chendar very general features, with an important, more peculiar, exception: at Termessos,⁷⁵ a podium is stepped and clearly reminds Platform 3, although steps appear here less high and more regular. Worthier of mention for their similarity to the Kal-e Chendar platforms are occurrences from Roman Syria: there, the podia surveyed or excavated at Djuwaniyeh, Mares, Taltita, and Zebed⁷⁶ are closer to our platforms for their size and proportion, especially the latter two, as they are again stepped like Platform 3. Very interesting is the cemetery of Hippos⁷⁷ because podia (at least twelve) are there aligned side-by-side in a way that closely recalls the arrangement of the platforms found on the North Terrace at Kal-e Chendar, likewise aligned following the same orientation. The presence of side-by-side free standing sarcophagi can be also detected in funerary contexts of Cilicia, such as in the Olbia cemetery and in the necropolis of Diocaesarea (Uzuncaburç).⁷⁸ The best-known examples of funerary podia from Roman Phoenicia are probably those found at Tyre in the so-called al-Bass necropolis and in the city necropolis of Beirut,⁷⁹ but Phoenician types are less similar to our platforms than those from Syria.

Overground substructures could be also used to support small free-standing architectures. Such is the case of the so-called elevated tombs of Caria and Phrygia.⁸⁰ These tombs, characterized by a podium supporting a small roofed chamber, an aedicula or a periptery, seem to reflect a popular trend that incorporated some elements of the Hellenistic tradition in Roman architecture of Asia Minor.⁸¹ The squared overground high pedestals of these funerary monuments are similar for their size and proportion to Platforms 1 and 2, although they are usually higher; they can also embody small loculi (such as at Milas). Far bigger and higher, so that they can be hardly used as a close parallel to our platforms, are the monumental tombs of Hiram (in the Tyre region) and Amrit, which support saddle-roofed chambers or pyramid-like monuments that clearly derive from prototypes dating back to Satrapal times.⁸²

⁷⁴ See Eisenberg, Kowalewska 2021, 132-133 for the first two; see Turnbow 2012, 321 for the third.

⁷⁵ Eisenberg, Kowalewska 2021, fig. 23b.

⁷⁶ For description and references of the four examples mentioned, see Eisenberg, Kowalewska 2021, 128-129, fig. 17. For further examples see de Jong 2017, 321-322.

⁷⁷ Eisenberg, Kowalewska 2021, 114-126, fig. 13.

⁷⁸ See Keil, Wilhelm (eds) 1931, 80-89, fig. 37 (for Olbia), 72-79, fig. 32 (for Diocaesarea).

⁷⁹ For Phoenician types, see de Jong 2010, 602-618, including also other examples. Similar to the Tyre and Beirut types are also occurrences in Upper Galilee, such as Tell Kedesh; the latter site is interesting as it seems to show clear continuity with Achaemenid traditions (Ovadiah, Mucznik 2011).

⁸⁰ For elevated tombs from Milas, in Caria, and Hierapolis, in Phrygia, see Cormack 2004, 17-29.

⁸¹ Nováková 2012, 195-196; 2016. It is of course logical to refer such a tradition to the mausolea of satrapal Asia Minor, for instance the famous Nereid Monuments of Erbinna (Arbinas) at Xanthos, now in the British Museum.

⁸² See for all de Jong 2017, 71-75, figs 21-22.

In general terms, the platforms on the North Terrace of Kal-e Chendar recall the layout, size and proportion of overground substructures. It seems unlikely that they were built for this purpose basing on the few excavation data available, however. Neither podia nor elevated tombs have indented stairs such as the one of Platform 1. Platforms 2 and 3 have characteristics that could allow their interpretation as substructures: however, no traces, even residual, of stone monumental sarcophagi (a type unattested east of the Euphrates) were found. It is even unlikely that they supported elevated tombs, as no decayed building materials (stones or baked bricks) were recognized, except for the blocks collapsed from the retaining walls of the platforms themselves.⁸³

Another type of platform-like structure is that of overground funerary markers. These are usually datable to the BCE centuries but are less documented in contexts of the Near East, even if they are diffused over a wide area. Probably, the most cited Hellenistic overground funerary markers are epitymbia, small constructions marking the presence of underground burials, widely diffused in necropoleis of Sicily. These have been particularly categorized in the last decades⁸⁴ and the so-called type III widely display platforms, sometimes stepped,⁸⁵ that actually recall our structures, especially when they are aligned along roads; it must be also added that Sicilian epitymbia are usually smaller (if not far smaller) than the Kal-e Chendar platforms and, most important, that they belong to a cultural context that can be hardly compared to that of highland Elymais. Overground markers shaped as platforms and dated to the Hellenistic period have been found in the Ayios Ermoyenis necropolis at Kourion (Cyprus): here a pedestal-like marker overlapping underground funerary chambers is similar to our platforms for its squared proportion but it is far smaller, as it does not exceed 3 × 3 m.⁸⁶ Closer to mention is the so-called Π-shaped funerary monument at Labraunda,⁸⁷ an overground stone structure overlapping underground burials supposedly devoted to a dynast or high-status person: this monument reveals again size and proportions comparable to Platforms 1 and 2. In Asia Minor pedestal-like markers could have been even included in hybrid burial contexts that combined a chamber tomb and a funerary overground structure (in Greek epigraphs, still reminiscent of the Hellenistic tradition, these hybrid monuments are called *bomos*).⁸⁸

As already noticed, the platforms on the North Terrace have not been dismantled by us: therefore, we couldn't verify if they overlap underground burials. The possibility that they are funerary markers (especially Platforms 2 and 3, as Platform 1 could have been built also for other purposes) must be thus considered probable until it will be validated. It must be said, however, that given the proximity between the platforms, it will be hard to approach underground structures (if any) avoiding partial (or large) destructions of the unearthed features. In addition, it must be also noticed that geophysical survey doesn't seem to be informative, due to the presence of stone debris on surface, due to the ground morphology (a lithosol), and due to the stone material present in the subsurface.⁸⁹

The latter type of platform-like funerary structure having layout and proportion comparable to our samples, that of overground tombs, is extremely rare. Indeed, built-up tombs can be more frequently recognized as mausolea or tower-like buildings, such as in west and north Syria.⁹⁰ Platforms having this function are almost unattested: one can mention again the al-Bass cemetery of Tyre, in which

⁸³ It is true, as already said, that the platforms were covered by a stone assemblage; however, in such an assemblage, stones were of irregular size and shape, and very different from the stones used in the platforms' masonry. The fact that stones in the assemblage could be the outcome of blocks' breakage cannot be excluded, as we have also noticed for the Upper Terrace, but it seems here quite improbable. It must be also added that, if stones could have been used, hypothetically, to build roofed chambers, other structures also occurring in elevated tombs, such as peristyles, would have been more probably built at Kal-e Chendar in baked bricks (as the brick column fragments found in different points at the site attest), and these are also absent.

⁸⁴ See for a general overview Tullio 1990, and for more recent excavated contexts, Mazzù 2016, Sofia 2019 (Messana), and Bacci et al. 2018 (Abakainon).

⁸⁵ Some samples from Cefalù or Lentini (Leontinoi) are particularly interesting with this regard.

⁸⁶ MacFadden 1946, figs 3-4.

⁸⁷ Henry 2011, figs 10-11.

⁸⁸ Ronchetta 2018, 52-57. The same word is likewise used to define altars or pedestals.

⁸⁹ Due to the described soil features, only a ERT survey (Earth Resistivity Tomography) could be potentially effective: electrode spacing of 50 cm, so that 60 electrodes can cover 30 m profile, is a possibility; considering a profile length of 30 m, a penetration depth of around 5-6 m can be foreseen. We couldn't plan and perform such a survey, unfortunately.

⁹⁰ See de Jong 2017, 318-320, 322-324 for an overview.

platforms can embody burial loculi inside their walls.⁹¹ The core of our platforms, a filling of loose earth and rubble retained by perimeter walls, doesn't seem appropriate to conceal loculi or burials, as this function can be more logically better performed by a core built of masonry. It seems unlikely that our platforms were tombs themselves, but this assumption demands again to be verified thanks to the dismantlement of at least one platform.

Be that as it may, there can be little doubts that the platforms on the North Terrace had not all the same function. The top of Platform 1 could be accessed via a small stair, the top of the other two platforms could not. There must have been a reason to access the top of Platform 1: the most probable is to perform some rituals of unclear type, but likely funerary (given the context). The assumption that funerary rituals were performed in the cemetery is corroborated by the findings in some tombs' clusters (see below in this chapter). A stone betyl or stand found at the feet of Platform 1 seems the remnant of such a practice. Platform 1 could thus have been the support of small altars,⁹² or similar facilities now lost. Does this exclude that Platform 1 was likewise a funerary marker? Of course, it doesn't.

The function of markers appears in the end the most probable among the hypotheses we have considered, and such a function is not a priori related to the eventual finding of underground burials in the future: although remote, the possibility that our platforms are conceptual funerary markers, thus cenotaph-like monuments, cannot be ruled out completely. Whether real or conceptual markers, the platforms on the North Terrace reveal a clear propension to monumentality that distinguish them from the tombs. They stand on the highest point of the area in which they are placed, to be visible from afar, and overlook the tombs in the nearby. They appear to have been subsequently built one after the other, following an arrangement that clearly establish a link between them, as if they were the signals of interrelated events happened over time: the celebration of the death of very important individuals, maybe belonging to the same group –family (?) or dynasty (?)–, one is inclined to think. If in the future tombs will be unearthed below one or more platforms, these would probably be of utter importance.

Worthy of interest, whatever they may be interpreted, is that these monuments patently put the cemetery of Kal-e Chendar in a global dimension, a dimension in which the monumental and celebrative attitudes of funerary contexts perfectly match with the prestige attached to the sanctuary on the Upper Terrace (see above). It is evident that for their general aspect, location, and arrangement Platforms 1, 2 and 3 are reminiscent of global trends widely diffused since the Hellenistic period, as it was, from a visual point of view, the ruler statue reproducing a prototype that could hardly be more global than it was. Such trends were of course object of appropriation to be adapted and embedded in the local milieu, but the global ambition of the people dedicating statues and buried there doesn't seem to be anymore neglectable. The same ambition is likewise revealed by what remains of the funerary assemblage found in one of the tombs we excavated (T23, see below).

6.5.2 Trench 9 (= T23) (E. Foietta, M. Rohuani Rankouhi)

Trench 9 was opened at the east limit of the North Terrace, east of Trench 13, in the place of a semi-underground tomb already recognized by our survey, T23. The trench was widened to understand the area surrounding the tomb itself. T23 is among the most impressive tombs discovered at the site (Figs 6.94–6.96). It is composed of a main underground funerary chamber and a stepped corridor with a rectangular niche and a small chamber. To gain the space for both chambers and for the corridor a large ditch was excavated in antiquity. The tomb's walls, built of roughly cut undressed stones, have

⁹¹ See footnote 79 for references.

⁹² As is well known funerary altars of various type are widely diffused in the Hellenistic and Roman world, in west and east Mediterranean but also in Asia Minor and Syria. Bibliography is wide on this matter and almost all the most important museums in the world display examples of stone cubic altars of various size, but usually ranging from 30 to 70 cm in height. See Coulton 2013 for the correlation between some Asia Minor platform-like funerary structures (called *bomos*, see above) and altars, especially about the symbolic value of altar probably attached to platforms.

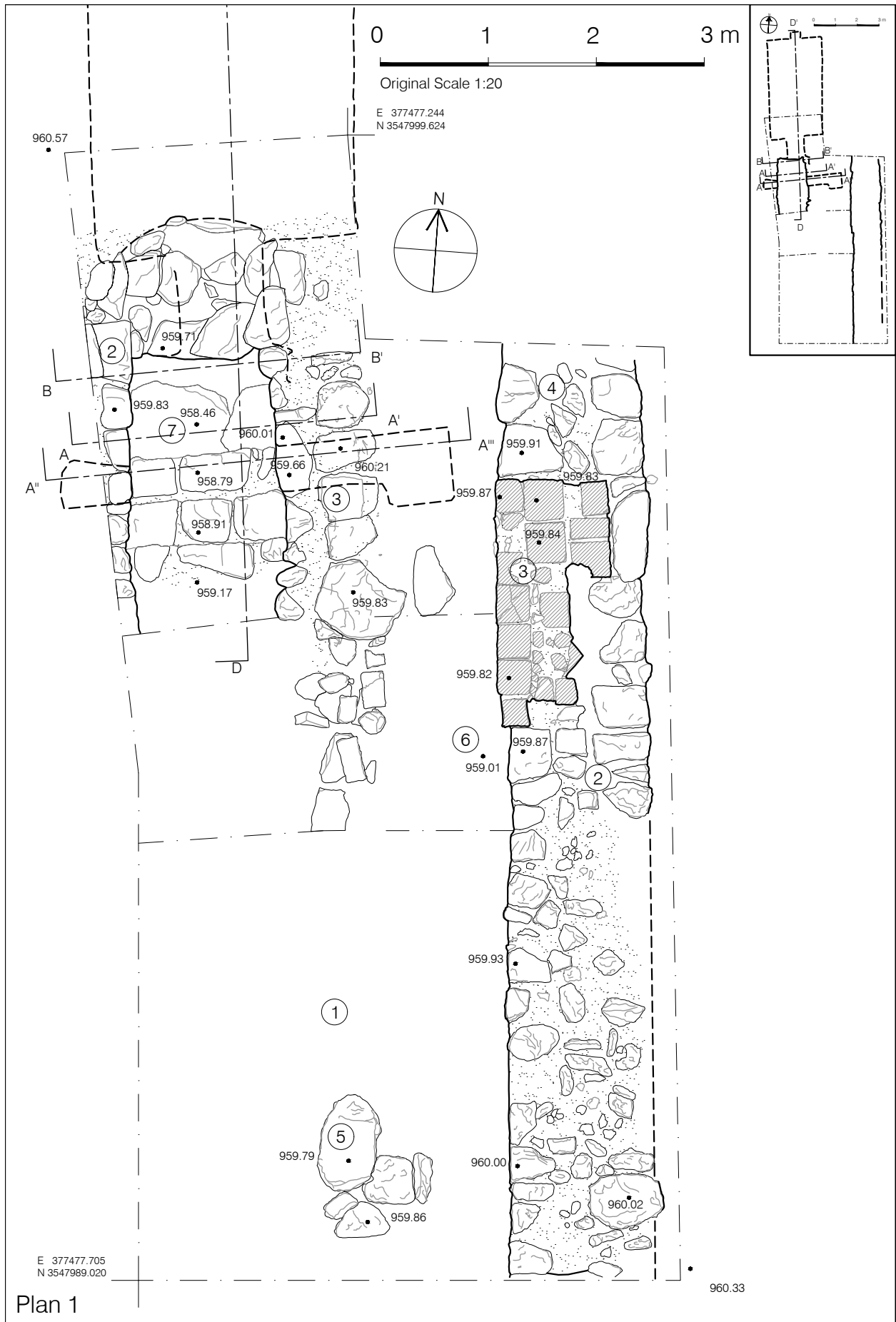


Figure 6.94a - Trench 9 (= T23). Layout of the excavated area (scale 1:50). Detail of the stepped corridor

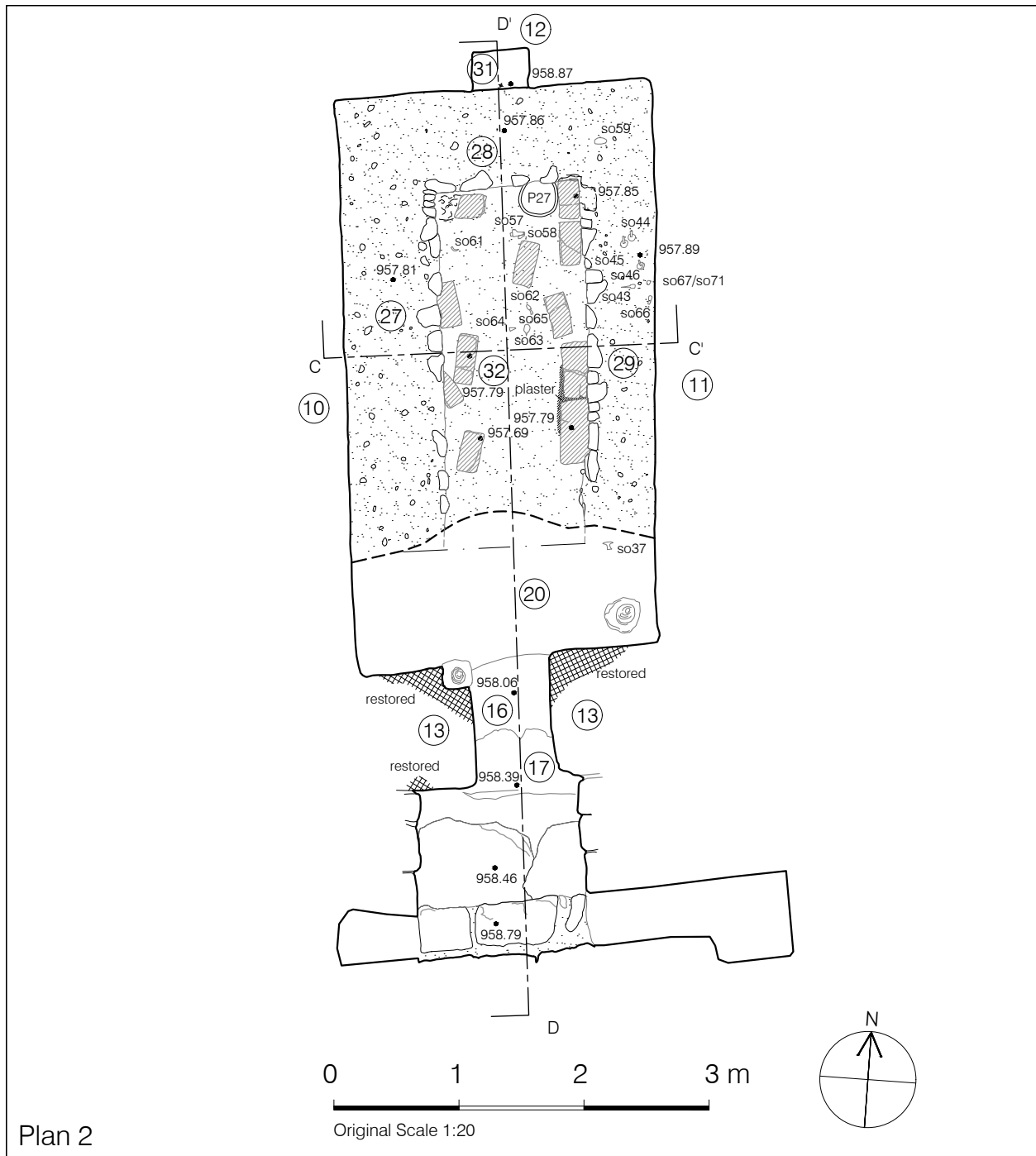


Figure 6.94b - Trench 9 (= T23). Layout of the excavated area (scale 1:50). Detail of the funerary chamber

been thus lined against the ditch's limits to set the perimeter and to support a high saddle roof, made of huge stone slabs. The roof has been broken in two points by looters.

The corridor, delimited by the walls SU2 and SU3, measures about 4 m in length and 1.4 m in width. The west wall (SU2) measures about 2.50 m in length and c. 40 cm in width. It was preserved for 1.40 m at its maximum height. The east wall (SU3) measures about 3 m in length and c. 80 cm in width; it was preserved for 1.80 m at its maximum height. The corridor contains a stair leading to the funerary chamber's entrance (Figs 6.97-6.98). The chamber has a façade oriented to the south, which was likely well visible when the tomb was in use. The stair (SU7), made of roughly cut stones and slabs, encumbers the whole corridor and must have been opened to the sky: it consists of five steps (including the chamber's threshold). The first step is about 50 cm below the present surface (at

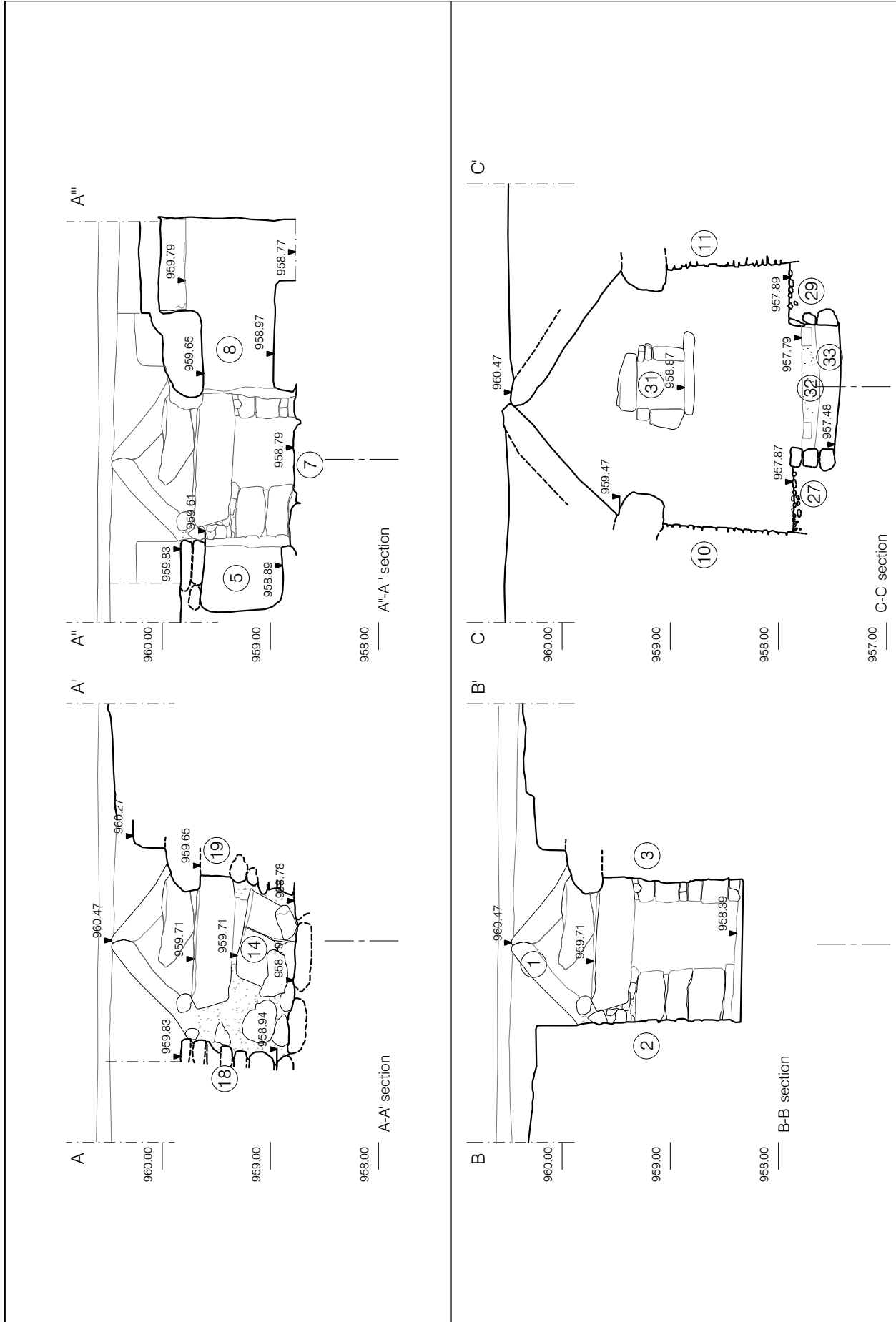


Figure 6.94c - Trench 9 (= T23). Sections A-A, B-B, C-C of the excavated area (scale 1:50).

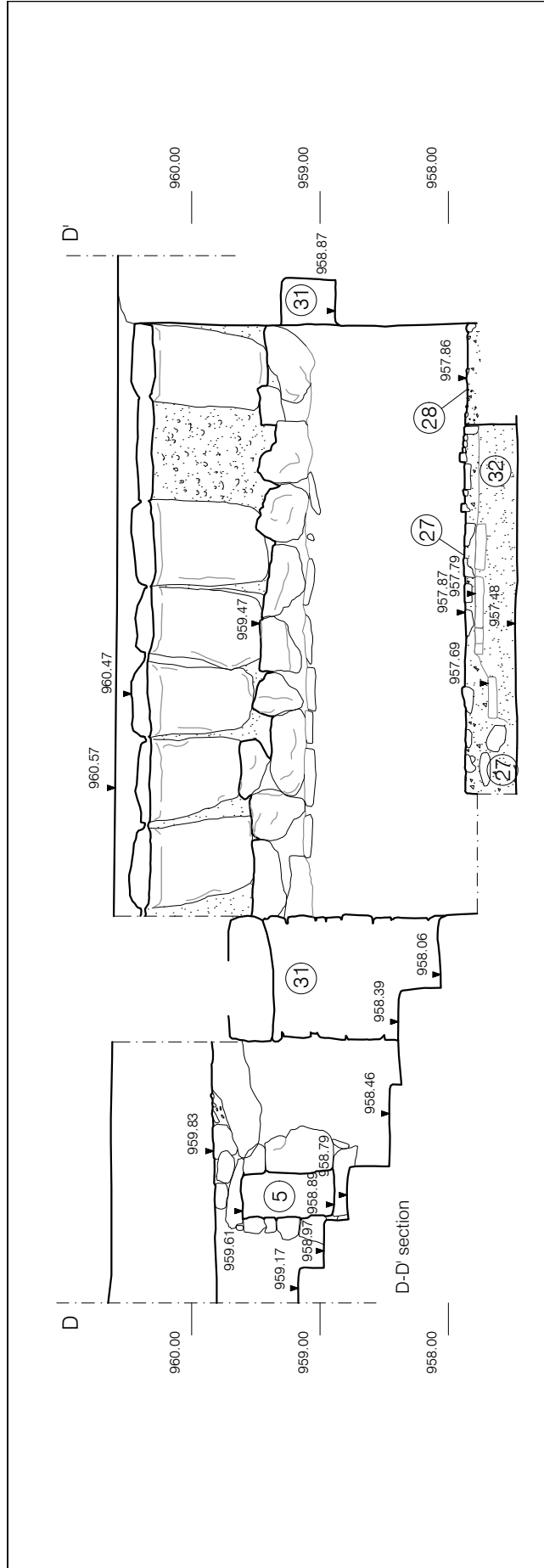


Figure 6.94d - Trench 9 (= T23), Section D-D of the excavated area (scale 1:50).



Figure 6.95 - Trench 9 (= T23).
SU 17 from the south. In
the background the tomb's
entrance blocked by a stone
slab and rubble



Figure 6.96 - Trench 9 (= T23).
SU 17 from the south. In
the background the tomb's
entrance

Figure 6.97 - Trench 9 (= T23). SU 17 seen from the funerary chamber



Figure 6.98 - Trench 9 (= T23).SU 17 from the north



an elevation of 959.170 m asl). The second step, made of roughly square blocks, is 26 cm below the first one; the third, located in correspondence of the entrance of a small niche to the west and a small chamber to the east, is at an elevation of 958.79 m asl. The fourth step, built about 30 cm below the lower one, is made of rounded stones, sometimes of big size, levelled with soil and rubbles.⁹³

A small niche measuring c. 80 × 30 × 65 cm has been opened in the corridor's west wall, close to the chamber's entrance (Fig. 6.99). A roughly cut slab was used as the niche's lintel at 959.610 m asl. The niche was filled with small- and medium size irregular stones, mixed with soil and rubble (Fig. 6.100). In the niche, scanty fragments of animal bones mixed with earth (SU6) were found (Fig. 6.101). The bones probably belonged to a ship puppy –or a goat (?)– sacrificed during some funerary rituals there performed. The relation existing between the walls of the corridors and those of the funerary chamber shows that the corridor was built just before the chamber itself.⁹⁴

On the corridor's east wall, approximately in front of the niche, a small chamber covered by a low saddle roof, made of stone slabs, was excavated (Fig. 6.102). Such a chamber measures c. 1.70 m in length and 70 cm in width. Irregular stones and rubble blocked the chamber's entrance, measuring 70 × 40 cm (Fig. 6.103). The chamber contained a layer of loose earth (SU9) likewise mixed with fragments of animal bones and the remains of a fire. The latter findings testify to the use of the chamber's interior for sacrifices or rituals, as the niche in front of it (Fig. 6.104). Given that the evidence of sacrifices found in, or close to, familiar underground or semi-underground tombs is scanty in Hellenistic and Parthian Iran and Mesopotamia,⁹⁵ the funerary custom witnessed by our excavation seems characteristic of Kal-e Chendar.

The main funerary chamber has an entrance measuring 70 × 100 cm approximately, opened in a thick wall (SU13). Such a wall measures 2.50 m in length, 1.90 m in height and c. 95 cm in width. The wall's top approximates the present surface (at 960.211 m asl), the wall's foundation was laid at 957.771 m asl (Fig. 6.105). The entrance's threshold is about 2.4 m below the present surface (at 958.060 m asl) and creates a step to the funerary chamber's ground. The entrance was blocked by a flat slab, broken lengthwise, and by small stones mixed with rubble to fill the gaps. Such a slab was clearly not part of the original closure. It was here re-used to close the entrance when the original door was removed, probably by looters, in antiquity. The slab here re-used to close the entrance further to the first access, was then broken to re-enter the funerary chamber and re-placed (this time broken) in its previous location. Along with the damages of the roof, the entrance's stratigraphic context shows that the tomb was repeatedly entered to be looted since ancient times. It may be supposed that the funerary chamber was accessed by the entrance in antiquity, when the corridor was still opened to the sky, and by the broken roof in more modern times, when the corridor was encumbered by soil and rubble, and thus invisible.

The chamber measures 4.5 m in length and 2.4 m in width. Its dimension is exceptional not only in comparison with the tombs identified at Kal-e Chendar but also with other underground funerary chambers discovered in Iran and Mesopotamia.⁹⁶ The undressed stone blocks used to build the chamber's walls are bigger in the lower courses and progressively smaller in the upper: this allowed good stability to the structure. A niche (40 × 30 × 50 cm) was opened at the centre of the chamber's back wall (SU12)⁹⁷ (Figs 6.106-6.107), to contain a small jar or a lamp, as it frequently happened in Parthian underground tombs both in Mesopotamia⁹⁸ and in Iran.⁹⁹ The courses of the chamber's long walls project inward approximating to the roof to reduce the space covered by the roof itself.¹⁰⁰ This

⁹³ The biggest one measures c. 1 m in length and c. 50 cm in width.

⁹⁴ SU13 leans on SU2 and SU3.

⁹⁵ Boucharlat, Haerinck 2011, 67.

⁹⁶ See for instance the dimension of underground funerary chambers discovered at Susa and Gelalak (Boucharlat, Haerinck 2011, 64; Rahbar 2007, 468-469; Farjamirad 2015, 19-21).

⁹⁷ A long slab (at 958.870 m asl) was placed at the niche's base, a roughly cut stone was employed as lintel.

⁹⁸ Boucharlat, Haerinck 2011, 67.

⁹⁹ Rahbar 2007, 468.

¹⁰⁰ See Figs 6.94c, 6.107-6.108.

Figure 6.99 - Trench 9 (= T23). West niche from the east



Figure 6.100 - Trench 9 (= T23). West niche blocked with stones from the east





Figure 6.101 - Trench 9 (= T23). West niche. SU 6 with bone's fragments



Figure 6.102 - Trench 9 (= T23). East small chamber with saddle roof



Figure 6.103 - Trench 9 (= T23). East small chamber's entrance blocked with stones



Figure 6.104 - Trench 9 (= T23). East small chamber. SU 9 with bone's fragments



Figure 6.105 - Trench 9 (= T23). Entrance of the funerary chamber



Figure 6.106 - Trench 9 (= T23). Funerary chamber. Detail of the niche in the back wall (SU 12)

is a saddle roof (SU24) built at about 1.5 m from the chamber's floor:¹⁰¹ it was originally composed by 14 slabs of oblong shape (Figs 6.108-6.109), arranged in two rows of 8, even if only 16 slabs in two rows of 7 remain after the roof was broken.¹⁰² Looking at the present surface elevation, one may suppose that the upper part of the roof (at 960.470 m asl) emerged from the ground, probably with a slight hill appearance.

Traces of ancient restoration of the roof and of the chamber's south wall (SU13), close to the entrance, were found.¹⁰³ Worthy of mention is the finding of ancient door sockets reused in the wall's texture during restoration activities (Fig. 6.114): these sockets, originally placed against the entrance's threshold and lintel, clearly show that a hinged stone door, now lost, must have been originally used to close the tomb's entrance (Fig. 6.110).¹⁰⁴ Such a door, which one may imagine locked by iron shafts (as in T26 and T28), was probably broken (and removed), along with its sockets and part of the entrance's wall, to access the tomb. Once the door was removed, its sockets were used to repair the damages so caused. No fragments of the door were found in the chamber or in the nearby area. However, one may think that it was very similar to the doors we found in, or close to, other tombs, such as T24, T26 and T28.

The chamber was filled by a thick layer of soil and debris (SU20) close to the entrance. In this layer many potsherds were discovered that seem to testify the displacement of some funerary goods close to the entrance during looting activities. Against the east, west and north perimeter walls three low funerary benches, rectangular in shape, were found (SU 27-29) (Figs 6.111-6.113). Benches are made of pebbles delimited by baked bricks and small irregular stones. The west bench (SU27) measures about 2.7 m in length, 80 cm in width, and 20 cm in height. The north bench (SU28) measures about 2.5 m in length, 80 cm in width and 30 cm in height. The east bench (SU29) has the same length of the west one, but it is narrower (50 cm in width). Fragments of bones, extremely scanty and thus unidentifiable,¹⁰⁵ were found on, or very close to, the benches, along with the remains of funerary goods: among the most relevant goods, we discovered the fragment of a gold mouthpiece (chapter 9, no. 3/SO59) at the corner of SU28 and SU29, a bronze spoon (chapter 9, no. 47/SO43), three bronze appliques (?) (chapter 9, no. 40-42/SO44-SO46), and a bronze ring (chapter 9, no. 34/SO71) on SU29. Fragments of bones, vessels broken into sherds and goods were likewise found in layers that filled the space between the three benches (SU32 and SU33) at about 957.790 m asl. Among the most relevant goods here found one can mention the fragment of another gold diadem (chapter 9, no. 1/SO57), a gold mouthpiece (or mouth-covering) (chapter 9, no. 2/SO58), a bronze shallow bowl (chapter 9, no. 44/SO61), a fragmentary bronze spoon (chapter 9, no. 48/SO62), a bronze spatula (chapter 9, no. 38/SO63), a fragmentary iron knife (chapter 9, no. 57/SO64), and a bronze mirror (chapter 9, no. 37/SO65).

Such an assemblage is clearly what remains of one or more funerary sets after repeated lootings, and one must consider that it should have been far richer and larger. The assemblage includes both male and female goods, but the latter are higher in number. Be that as it may, the goods here found testify that the funerary chamber was repeatedly used to inhumate a number of individuals over the time, and that such a kind of monumental underground tombs must have been family tombs. The pottery set discovered in T23 is likewise impressive and shows a variety of types (Fig. 11.23).¹⁰⁶ Blue glazed vessels, mainly dated to the Parthian period, seem to occur frequently, however sherds made in red

¹⁰¹ The funerary chamber of T23 is less high than the underground chambers discovered at Susa and Gelalak (Farjami-rad 2015, 190; Boucharlat, Haerincq 2011, 67).

¹⁰² To ensure the roof stability during and after excavation, and to support the remaining roof slabs, iron scaffolding tubes have been placed inside the funerary chamber. Tubes have been left in their position even after the recovery of T23.

¹⁰³ Cut stones of smaller dimension and re-employed were used to restore the entrance.

¹⁰⁴ The door sockets have holes measuring respectively c. 18 and 20 cm in diameter.

¹⁰⁵ It is even uncertain whether human or animal.

¹⁰⁶ Twenty-six complete or semi-complete vessels have been recomposed from fragments mainly found in SU20 and SU32: among the most relevant, 9 glazed bowls (chapter 7, Fig. 7.26: nos 5-9; Fig. 7.27: nos 11-12, 14), 2 two-handled glazed jars (Fig. 7.30: nos 21, 23), one two-handled glazed pot (Fig. 7.31: no. 25), 4 amphoriskoi (Fig. 7.31: nos 29-30, 32, 34) 6 one-handled glazed jars (Fig. 7.27: nos 15-16; Fig. 7.28: no. 18; Fig. 7.29: nos 19-20), one glazed pilgrim flask (Fig. 7.30: no. 24), one little pot in Red Slip Ware (Fig. 7.34: no. 65), one two-handled little jar in Red Slip Ware (Fig. 7.34: no. 64) and one jar in Red Slip Ware (Fig. 7.35: no. 69).



Figure 6.107 - Trench 9 (= T23). Funerary chamber. North wall and roof from the south



Figure 6.108 - Trench 9 (= T23). Funerary chamber. Funerary benches (SU 27-29) from the south

Figure 6.109 - Trench 9 (= T23).
Funerary chamber. Detail of the
saddle roof from the south



Figure 6.110 - Trench 9 (= T23).
Entrance blocked seen from the
funerary chamber





Figure 6.111 - Trench 9 (= T23). Funerary chamber. Funerary benches during excavation from the south



Figure 6.112 - Trench 9 (= T23). Funerary chamber. Funerary benches during excavation from the south



Figure 6.113 - Trench 9 (= T23). Funerary chamber. SU 27 from the east



Figure 6.114 - Trench 9 (= T23). Funerary chamber. Stone door socket reused in wall SU 13

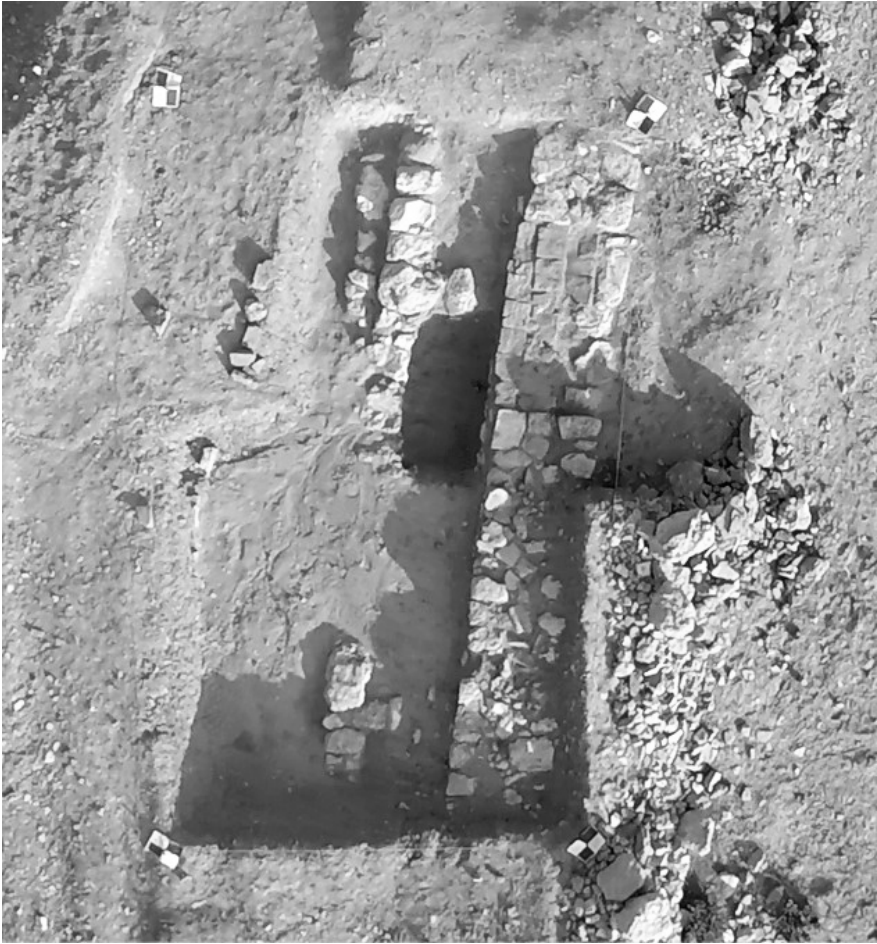


Figure 6.115 - Trench 9 (= T23). Aerial photo taken from UAV



Figure 6.116 - Trench 9 (= T23). SU 2, SU 4 and SU 3 east of the stepped corridor



Figure 6.117 - Trench 9 (= T23). SU 2, SU 4 and SU 3 from the north



Figure 6.118 - Trench 9 (= T23). SU 2, SU 4 and SU 3. In the foreground the stepped corridor from the west



Figure 6.119 - Trench 9 (= T23). Detail of SU 3 from the east



Figure 6.120 - Trench 9 (= T23). Detail of SU 3 from the west



Figure 6.121 - Trench 9 (= T23). Detail of a door socket loose in the subsurface

slip ware could be even more ancient,¹⁰⁷ thus indicating a long-lasting use of the chamber. In the end, the goods found show that these tombs were used by a rich plutocracy.

Trench 9 was widened on the east side of T23, south of the corridor, to better understand the area around the tomb itself. The enlarged part measured 5 × 5 m (Fig. 6.94a). Below the surface, in the east part of the trench, a north-south wall made of irregular stones and baked bricks was discovered (Fig. 6.115). The wall (SU2 and 4), not completely unearthed as it develops beyond the excavation limits, follows the orientation of T23's corridor east wall. The top of both walls lay approximately at the same elevation (and 959.870 and 959.830m asl respectively). The south part of SU2, arranged with medium and big stones filled with soil and rubble, extends for 5 m lengthwise and is c. 1.30 m wide (Fig. 6.116); its west limit is well outlined and was found down to a depth of 60-70 cm from the top (at 959.890 m asl). The north part of the wall (SU4) is 1.10 m long and c. 1.30 wide (Fig. 6.117).¹⁰⁸ A portion of the wall, preserved for 2.20 m in length and 1 m in width, is made of baked bricks (SU3): these were placed on three rows and three courses filled with clay mortar (Figs 6.118-6.120). The west limit of the portion made of baked bricks slightly protrudes from the stone parts, probably because of sliding. The east portion is badly damaged, as several baked bricks were already lacking or found broken during excavation. Two brick formats have been recognised, the first measuring 31.5 × 31.5 × 7 cm, the second 36 × 36 × 7 cm (Fig. 6.119). This seems to show that bricks have been here re-used to restore a part of the wall that was damaged, however the possibility that they were placed as a threshold, or a low stair cannot be ruled out completely.¹⁰⁹ At the site, the first brick format was yet unknown, the second is instead attested in Trench 3 and in the trench opened by Stein and Karimi. Below the brick's fragments, a row of stones was discovered that could be maybe interpreted as the stone wall foundation. Rare potsherds were discovered in a layer lying against the west wall's limit (SU1): these are mainly of glazed ware and appear to be dated to the Parthian period.

¹⁰⁷ For typology, chronology, and function of the vessels, see chapter 7.

¹⁰⁸ In this point, the wall's top lays between 960.019 and 959.809 m asl.

¹⁰⁹ The proposal of a low stair is supported also by the surface morphology of the area, with slopes to be walked.



Figure 6.122 - Trench 9 (= T23). Detail of a door socket loose in the subsurface

A small sounding (1.88 × 1.20 m) was opened between the stone wall (SU2 + SU4) and T23's east wall to verify the stratigraphic context between the two structures. Here a filling layer of soil and few small stones was found (SU6) at 959.580 m asl. In proximity of T23 it contained a round-shaped door socket, with a hole of 8-11 cm, clearly found out of its original context, for it probably belonged to the entrance of a further smaller tomb of the area (Figs 6.121-6.122).¹¹⁰ The excavation was stopped at 959.010 m asl for the lack of other archaeological records. The space between T23's corridor and wall SU2 + SU4 corresponds to the area of the underground small chamber accessible from the corridor itself. Such a space, measuring c. 1.20 was probably filled in ancient times but it does not show a clear relation between the two structures. Basing on its position and orientation, wall SU2 + SU4 can be confidently interpreted as what remains of an enclosure that surrounded T23 and delimited the space in which it was located. A stone assemblage was discovered at about 5 m from T23's east wall (SU5): these stones are probably what remains of a further ruined wall, identified for about 1.60 × 1.10 m and approximately following the same orientation of T23's corridor. The building technique is the same of the other walls unearthed in Trench 9. To protect the structures unearthed the trench was covered with the same soil resulted from excavation. Given the short distance between such an assemblage and wall SU2 + SU4, an additional trench, Trench 12, was opened further to the south.

6.5.3 Trench 12 (*E. Foietta, M. Rohuani Rankouhi*)

Trench 12 was opened about 20 m south of Trench 9. A square of 5 × 5 m was widened up to 6 m to the north. Below the surface, three walls (SU1, SU2 and SU3) delimiting a rectangular space, possibly a chamber, were unearthed (Figs 6.123-6.125). The west wall (SU1) is north-south oriented and built with small- and medium size undressed stones. It is 4.10 m long and almost 30 cm wide. The upper row of the wall texture is arranged with small stones, the deeper row, identified down to 60 cm from the surface (961.580 m asl), is made of bigger stones (c. 55 cm). SU2, found in the south part of the trench,

¹¹⁰ The hole of the door sockets discovered in Tomb 23 are larger in diameter (c. diam. 18 and 20 cm).

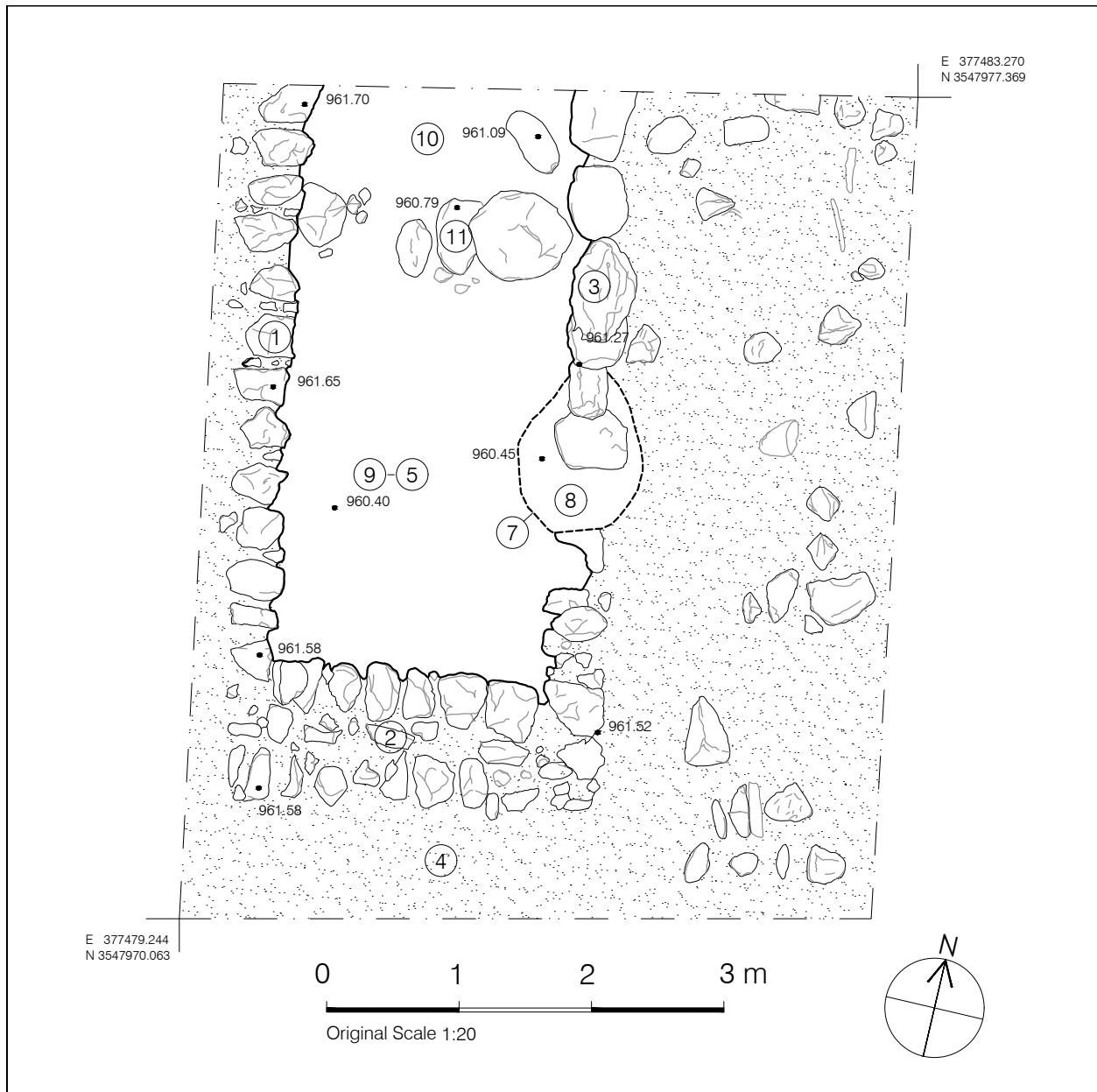


Figure 6.123 - Trench 12. Layout of the excavated area (scale 1:50)

it is east-west oriented and it is linked with wall SU1. It measures 2.90 m in length and 90 cm in width, and it shows the same building technique of SU1;¹¹¹ its foundation row was laid at 50 cm in depth (c. 961.090 m asl). The wall, the widest and more carefully built among those found in the trench, continued westward beyond the trench's limit. Wall SU2 is also linked with wall SU3, which follows the same orientation of wall SU1. SU3 is heavily damaged but it was possible to measure its length in more than 4 m and its width in c. 55 cm. It was built with medium- and large size undressed stones (c. 40-50 cm) with large stones placed in the foundation row. Such a foundation row lies at an elevation deeper than SU1 and SU2. Wall SU3 was partly destroyed by modern unauthorized excavations: a modern ditch (SU7) also destroyed the corner between SU 3 and SU2. The archaeological context was here disturbed also by agricultural activities. Another ditch (SU8) was found in the trench area: it was filled with rubble and plastic sheets, found at 960.450 m asl, which testify to recent looting activities.¹¹²

¹¹¹ The stones are smaller in comparison with the wall SU1 (30-40 cm wide).

¹¹² Part of wall SU3 and the ditch filling, wrongly interpreted as the remains of an underground chamber, were already visible in 2015.



Figure 6.124 - Trench 12. SU 1, SU2 and SU 3 from the north



Figure 6.125 - Trench 12. SU 1, SU2 and SU 3 from the east



Figure 6.126 - Trench 12. Flat slab found in SU 5

In the space delimited by walls SU1-SU3 a filling layer was discovered (SU5) that contained a flat stone slab measuring $49 \times 84 \times 76$ cm, close to south-east corner of the perimeter (Fig. 6.126). Such a slab, whose original function is unknown, was likely thrown by looters in the place where it was found by us.¹¹³ The bottom of SU5 reaches the walls' foundation in depth. Several iron fragments (for the most, probably nails), have been found that likely belong to modern ruined agricultural tools. A fragment of a pottery pipe (h. 11 cm; ext. diam. 7.5 cm; int. diam. 3.5 cm, thickness c. 2 cm) and some potsherds have been also found.

A structure east-west oriented (SU11) was found at 960.780 m asl in the north part of the trench. It is linked to the lower rows of walls SU1 and SU3, and it is made of medium-size undressed stones. Given its dimension (1.52 m long and 40-70 cm wide), SU11 could be interpreted as a threshold or doorstep. Below its foundation, a darker and more compact layer including rubble and few fragments of animal bones was found (SU9). A similar layer (SU10) was identified also to the north; both SU9 and SU10 were excavated down to the same depth (at an elevation of c. 960.550 m asl). The filling layer found inside the perimeter (SU9) contained several potsherds dating from the Parthian to the Islamic period, testifying the disturbed stratigraphic context. Given the presence in SU10 of some Parthian potsherds, it seems possible to suggest that in the north part of the trench, where walls SU1 and SU3 have been unearthed, and further to the north, beyond the trench's limits, ancient buried structures are still to be found.

Based on archaeological records, it appears that the structure unearthed in Trench 12, mainly composed by perimeter stone walls that probably delimited a narrow room (roughly measuring 4×2 m), have been particularly used (or re-used?) in modern times, down to present day. Such a structure shows some similarities for the building technique with the structures unearthed in Trench 10, a domestic context that can be dated to a phase of squatting of the cemetery, well after the cemetery's main phase of occupation. It is impossible however, to rule-out completely the possibility

¹¹³ It is worthy of note that the slab is similar to the one found in T23 to block the tomb's entrance.

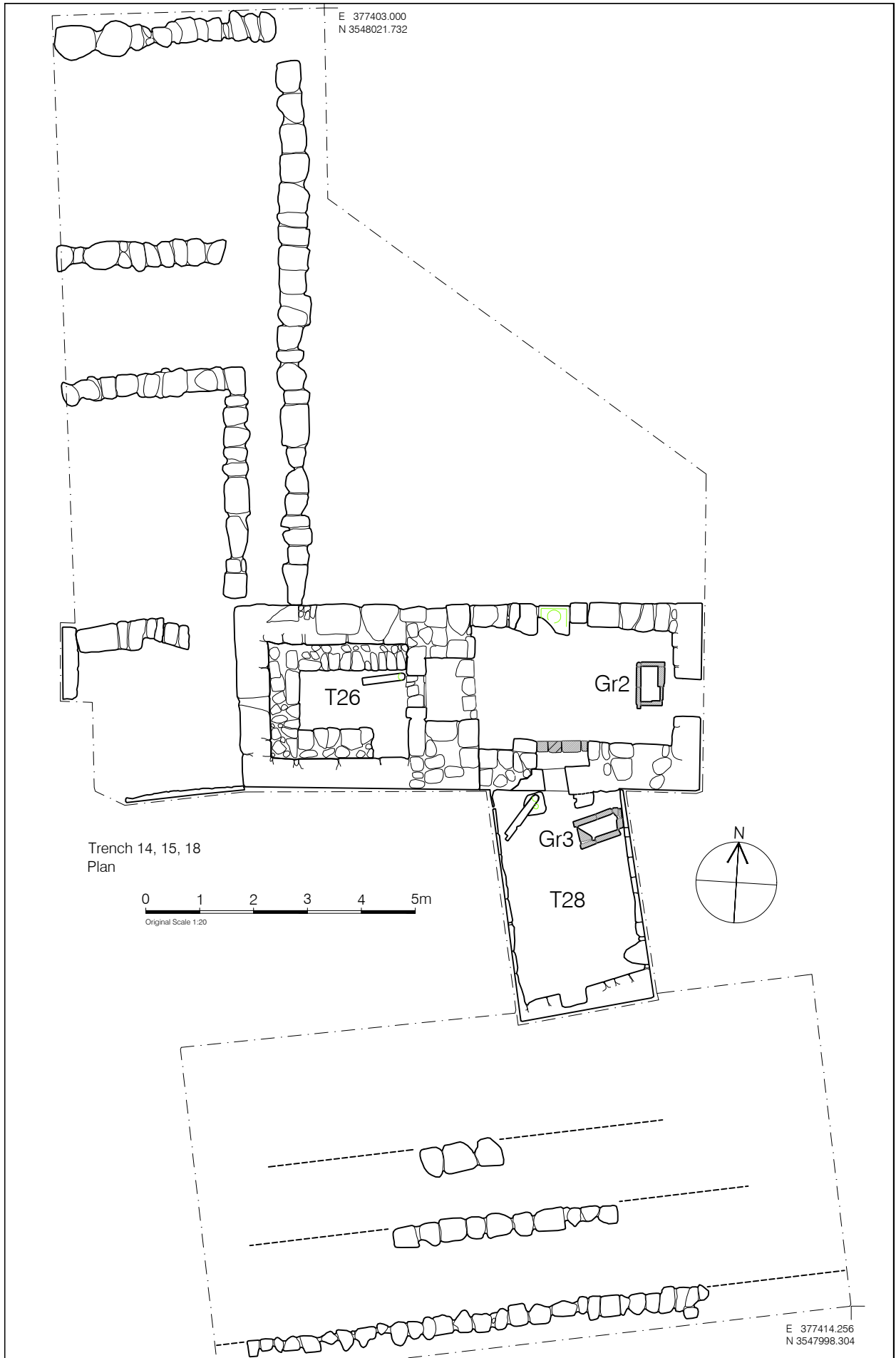


Figure 6.127 - Trenches 14 and 15 (= T28). Layout of the excavated area (scale 1:100)

that part of the walls unearthed in Trench 12 were built in antiquity and were later restored or reemployed. Walls SU1 and SU3 are evidently in connection with further remains located to the north and yet to be discovered, which could help to better understanding the context.

6.5.4 Trench 14 (*J. Mehr Kian, M. Rohuani Rankouhi*)

Trench 14 was opened in the area at the feet of the North Terrace, east of the modern road crossing the site and south of the so-called north stream (Fig. 6.127).¹¹⁴ In the northernmost part of the trench, along a north-south axis, a roomed building was found and only partially unearthed by our excavation (Fig. 6.128). Such a building is delimited by walls made of undressed stones, whose top was reached at an elevation of 964.436-964.167 m asl (SU31401, SU31404, SU31405, SU31413). The walls' texture reveals the presence of irregular and roughly cut stones as well as of much more regular stone blocks, which seems here reused after having been retrieved from another, probably more ancient, structure. No archaeological materials were found in strata, so that it is not easy to propose a chronology for the building unearthed. The archaeological context of the identified rooms (SU31409 and SU31407) is indeed very disturbed. However, the fact that perimeter walls are built with reused materials rather induces one to think that such a building must be dated to a period of reuse of structures of the Parthian period. Indeed, walls SU31401, SU31404 and SU31405 cover the remains of more ancient structures (SU31402 and SU31404): these are likewise stone walls (c. 2.2 m long and 70 cm wide) only partially identified below the above building, whose top can be estimated at an elevation of 962.843 m asl. As the building exposed for about 30 m² continues beyond the excavation limits, it is impossible to speculate on its function: given the date supposed for its making, later than the funerary complexes of the main phase, it can be assumed that the unearthed walls are what remains of a recent sporadic occupation, probably of domestic type¹¹⁵ (as the building unearthed in Trench 10).

South of the roomed building, a much more ancient semi-underground tomb (T26) was found below superficial layers covering the roof at an elevation of 964.436 m asl (Fig. 6.129). The tomb's roof top was reached at 963.957 m asl. The tomb's entrance is oriented to the east, and it opens on a small rectangular court with a floor made of pebbles and soil (SU31511). Such a court, measuring about 3 × 2 m, is only partially known and it is overlooked by another tomb, named T28. T26 and T28 delimit the west and south side of the court respectively. It is doubtful, though probable, whether other structures delimited the court north and east sides or not: our excavation was not widened to clear such an aspect. T26 and T28 are thus part of the same funerary complex, a complex that could also have included other tombs or structures yet to be discovered. The façades of both tombs opened on the court, having been clearly visible from the outside, as it was the case of other tombs excavated at the site (for instance, T23 and T24). This shows that tombs could have been interconnected each other because they were part of funerary complexes accessible via corridors or courts by users. It may be supposed that only the rear part of T26 was under the ground, because only this part of the tomb was partly built below the sloping terrain. The tomb's façade and front of the roof must have been unencumbered by soil and visible.

T26 had been repeatedly looted over time, as it was clearly witnessed by the fact that the roof had been heavily damaged to enter the funerary chamber. Only four slabs of the roof (SU31528) were preserved: their measures can vary but, as a rule, each slab measures 1.3 m × 50-60 cm × 30-35 cm approximately. Such slabs suggest that the tomb was covered by a saddle roof, set on rows of stones protruding from the walls' masonry. The slabs were found in the rear part of the tomb, in what should have been the underground portion of the funerary chamber. When the dimensions of the latter chamber are considered, it is possible to suggest that the roof was made of 12 slabs, six on each side, and one or two long flat slabs for the entrance area, where a long slab was identified close to the south wall.

¹¹⁴ Trench 14 has been excavated and documented by the Iranian team only. Fieldwork was conducted independently, beyond the joint schedule. Excavators decided to list stratigraphic units according to a system that differs from the one followed jointly.

¹¹⁵ The finding of a loose stone mortar in the open area east of the building may support such an assumption. In some pictures (Fig. 6.128), the mortar has been placed at the center of the court between T26 and T28, but it was actually found loose on soil (Fig. 6.40).



Figure 6.128 - Trench 14. Roomed building from the north



Figure 6.129 - Trench 14. Façade of T26 from the east (on the left, façade of T28 blocked by baked bricks)



Figure 6.130 - Trench 14. Entrance and door of T26 seen from the funerary chamber

The tomb's entrance (Fig. 6.129), about 1 m high, is receded from the façade, as it is flanked by protruding stone jambs, each c. 40 cm wide and 35 cm thick. Such jambs, as much high as the entrance, support a heavy lintel (SU31525), measuring 100 × 60 × 25 cm, and reached at 962.782 m asl. The entrance's threshold (SU31529), made of flat stones and measuring 1.4 × 1.1 m, was laid at 961.392 m asl to create a step between the exterior and the interior. The entrance was originally blocked by a monumental stone hinged door (SU31526), measuring 130 × 80 × 10 cm, which was found completely open inward (Fig. 6.130). The door, a monolithic stone slab, was made in all evidence to be clearly seen from the exterior, as was also the tomb's façade: the door's outer side was indeed carved with a cross pattern already attested in other tomb's doors found at the site (e.g., the door found close to T24): such a pattern reproduces a wooden frame embodying four rectangular panels. It is worthy of mention that such a door was found in situ, as its pivots still fit in their original holes: the lower one was carved in a small stone socket, placed just behind the threshold, the upper one was carved in a part of the lintel protruding inward (Fig. 6.131). Once closed, the door would have fit the threshold's step. This door type was clearly meant to be (re)openable at need by the tomb's users.

The funerary chamber, 3.60 m long and 2.40 m wide, is delimited by walls made of undressed roughly cut stones (Fig. 6.132). As attested for other tombs (such as T23 for instance), these walls were built after a ditch was excavated to embody the chamber. The chamber's height is not clearly measurable as the roof's slabs were not found in their original position or they were partially collapsed in the chamber itself. Perimeter walls were likewise only partially preserved.¹¹⁶

A small niche or window is opened in the chamber's rear wall. The occurrence of niches in the rear walls of chambered tombs is well attested, at Kal-e Chendar and in other sites of the Parthian world,

¹¹⁶ The north wall (SU31502), 3.6 m long, has its top at an elevation of 962.257 m asl; the south wall (SU31501-or 7), only 2 m long, has top at 962.512 m asl; the east wall (SU31512), only preserved for 1.5 m in length and 50 cm in width has top at 962.317 m asl; the west wall (SU31513), 2.4 m long and 60 cm wide, has top at 964.357 m asl.



Figure 6.131 - Trench 14. Entrance and door of T26 seen from the above. On the background, court and Gr2



Figure 6.132 - Trench 14. Funerary chamber of T26 seen from the above



Figure 6.133 - Trench 14. Restored roof of T26

a window is instead quite unusual. In such a case, it is impossible to say whether the rear wall of such a niche was blocked by a stone or not; if it was not, a small window could have allowed the visual communication between T26 and one of the rooms of the building unearthed north of it. It is thus uncertain whether a room located behind T26 is contemporaneous to the funerary chamber or posterior because stratigraphic relations between its very ruined walls and the walls of T26 have not been cleared: the walls of the roomed building already described, surely posterior, obliterate the traces of preceding structures almost completely. If this rear room existed, it must have been a completely underground structure of unknown access, function, and layout. Inside the chamber, three well-preserved funerary benches were found (Fig. 6.132).¹¹⁷ These are set against the north, west and south walls, and are built with irregular stones. On the corner between the west and north benches, scanty fragments of a human skull (?) and of a goat (or sheep) jaw were found. Other bone fragments were found in the layer between the benches. The chamber floor (SU31515) was reached at an elevation of 961.114 m asl. No funerary goods were found, except for an iron ring (chapter 9, no. 43/SO85) and two beads (chapter 9, no. 24-25/SO90-SO91). The relation existing between T26 and T28 allows us to propose a chronology to the Parthian period: funerary goods found in T28 are indeed more numerous and of clear Parthian date.

T26 was not covered by soil after the end of excavation. Some interventions were carried out to protect the unearthed structure and prevent further unauthorized access to the funerary chamber.¹¹⁸ The roof's slabs and stone door have been removed from their original position and stored in the funerary chamber to be visible from the exterior. The chamber was covered by a removable saddle

¹¹⁷ The south bench (SU31540) at 961.545 m asl, measured 210 cm in length, 50 cm in width and 24 cm in height; the west bench (SU31541), at 961-582 228 m asl, was 228 cm long, 50-60 cm wide, and 32 cm high; the north bench (SU31542) at 961.427 m asl, was 210 cm long, 50 cm wide, and 20 cm high.

¹¹⁸ All interventions have been planned and carried out by the Iranian team only. The same must be said for the interventions carried out in the context of T28.



Figure 6.134 - Trench 14. Entrances of T26 and T28 blocked by iron grids

roof, recalling in shape the original one, made of reinforced concrete (Fig. 6.133).¹¹⁹ The entrance, likewise the entrance of T28, was blocked by an iron framed grid made on purpose (Fig. 6.134): such a framed grid is removable, and it allows visitors to see the tomb's interior. All these interventions must be considered temporary.

6.5.5 Trench 15 (=T28) (M. Faraji, J. Mehr Kian)

Trench 15 was opened to investigate the south side of the court already identified in Trench 14.¹²⁰ The entrance of a tomb, named T28, was found on the court's south side. Such an entrance was found blocked by baked bricks (Fig. 6.129), probably laid in that point to close the entrance further to ancient looting activities. As it was ascertained for other tombs, T28 was repeatedly looted over time. The tomb was entered from the entrance itself and from the roof, which had been completely removed. The entrance, before having been blocked with baked bricks, had been left open. A hinged stone door was found in the same position of the door of T26 (Fig. 6.135). Such a door, measuring 129 × 85 × 10 cm, was open inward and its lower pivot was still in an *in-situ* stone socket, placed against a stepped threshold. The upper pivot was free, as its socket was probably broken when the door was forced to enter the tomb. The door's outer face is incised in a very simple way to reproduce a wooden frame embodying two panels: the presence of a 7 cm wide lock-hole is worthy of mention (Fig. 6.136). Such a lock-hole testifies that tomb doors were made to be reopenable.

The walls delimiting the funerary chamber (SU31803, SU31805), measuring about 3.70 × 2.20 m, are made of roughly cut stones following a technique widely attested at the site (Fig. 6.137); their top was

¹¹⁹ This was built to protect the tomb's interior from rain and sun exposure.

¹²⁰ Trench 15 has been excavated and documented by the Iranian team only. Fieldwork was conducted independently, beyond the joint schedule. Excavators decided to list stratigraphic units according to a system that differs from the one followed jointly.



Figure 6.135 - Trench 15 (= T28). Entrance and door seen from the funerary chamber

reached between 964.294 and 964.856 m asl. On the chamber's rear wall, a small niche of $60 \times 37 \times 26$ cm (SU31806) was found in axis with the entrance at an elevation of 964.237 m asl (Fig. 6.138).

The roof is entirely lacking, but the presence of a slightly protruding row of stones in the upper part of a wall allows us to propose that the chamber was covered with a saddle-roof. Unlike T26, the funerary chamber of T28 did not embody benches built along the perimeter walls. However, a number of squared baked bricks were found at an elevation of 963.119 m asl (SU31816) that could have been used to delimit places along the walls to lay inhumated human bodies (Fig. 6.139). The brick standard ($35/6 \times 35/6 \times 8$ cm) is the same employed in other structures discovered at the site, such as the platform (or altar) unearthed in Trench 3.

On the chamber's floor (SU31815) several objects were found that can be all dated to the Parthian period. A bronze coin found near the south wall, a drachm of Kamnaskires-Orodes or Orodes II (chapter 9, no. 84/C04), could have been part of a funerary set or be intrusive: whatever the case, such a coin allows one to postulate that the tomb was still in use in the mid-2nd century CE. On the floor also a golden mouthpiece (chapter 9, n. 4/SO81), a glass unguentarium (chapter 9, no. 50/SO80) and a glazed pot (Fig. 7.31: no. 27) were found. The finding of a stone betyl or base (chapter 9, no. 77/SO95) inside the chamber (SU31813) is worthy of mention along with the finding of a small limestone censer (chapter 9, no. 80/SO94) in debris encumbering the court at the entrance of T28 (SU31515) (Fig. 6.140). The latter objects testify that rituals or ceremonies could have been performed in front of the tomb façade, as it was also supposed for T23.

Among the most interesting findings related to T28 two cist graves can be mentioned that contained each the body of a child. One cist was dug in the funerary chamber of T28 (Gr3), the other in the court, close to the tomb's entrance (Gr2). Both these graves parallel the cist grave found in Trench 10 (Gr1). Gr3 (Figs 6.137, 6.141) was discovered under the chamber's floor, at an elevation of 963.047 m asl, close



Figure 6.136 - Trench 15 (= T28). Detail of the carved door and lock-hole, with broken stone socket



Figure 6.137 - Trench 15 (= T28). Funerary chamber seen from the above



Figure 6.138 - Trench 15 (= T28). Niche in the rear wall



Figure 6.139 - Trench 15 (= T28). Funerary chamber seen from the above. Squared baked bricks along the west wall



Figure 6.140 - Trench 14. Court delimited by T26 and T28 during excavation



Figure 6.141 - Trench 15 (= T28). Funerary chamber seen from the above. Detail with Gr3



Figure 6.142 - Trench 15 (= T28). Gr2 seen from the above

to the inner part of T28's entrance and to the east wall. The grave, roughly east-west oriented, was delimited by vertical baked bricks of the same type and size used to delimit the funerary spaces inside the chamber itself (and probably retrieved from that assemblage). Two bricks delimit each of the long sides, one brick each of the short sides, thus defining a grave of 75 × 36 cm. Given this dimension, the cist must have contained a single body. The grave was covered with two square bricks laid on their flat sides. On the top of the grave, the fragments of a golden object were found (chapter 9, no. 10/SO82), inside it (SU31817) some bone fragments (teeth and phalanxes) incoherently mixed were discovered, along with beads made of different materials (chapter 9, nos 16, 23, 26-28/SO86, SO87, SO89, SO92, SO93), a bronze ring (chapter 9, no. 31/SO83) and a bronze pin (chapter 9, no. 36/SO84). All these objects were part of the child's funerary set.

Gr2 was found below the floor of the court in front of T28 (Fig. 6.131). The grave, roughly south-north oriented was made like Gr3, with square bricks delimiting the perimeter: two bricks were laid on their flat side to form the grave's bottom (Fig. 6.142). The grave's covering was not found. Size and layout parallel those of Gr3. Inside Gr2, the skeleton of a child in fetal position, lying on its right side with his legs bent, was found. The child's head, looking toward the east, was south-oriented. Child skeletons are the only human remains found in their original position in tombs excavated at the site up to now. Funerary goods were likewise found in Gr2: among them, a glass unguentarium (chapter 9, no. 49/SO79), similar to the one found in the chamber, a small clay feeder (chapter 7, Fig. 7.31: no. 28) and a glazed carinated bowl (Fig. 7.27: no. 10).

These two cist graves must be dated to the same period of use of the tombs (probably not a short-one). They were surely dug after the building and first use of the funerary chambers, as they were made after having retrieved some baked bricks already used to delimit funerary spaces in T28. However, their funerary goods can be likewise dated to the Parthian period and their disposition must be the consequence of parental relations existing between the inhumated children and the tombs' users:

Gr3 was inside T28, Gr2 could have been in connection with T28 or rather with a further tomb to be discovered on the east side of the court. Be that as it may, cist graves clearly point to the fact that these tombs were family tombs. T28, like T26, has not been covered after the end of excavation. The same interventions were carried out to protect the unearthed structure.

6.5.6 Trench 18 (*M. Faraji, J. Mehr Kian, M. Rohuani Rankouhi*)

Trench 18 was opened at the north side of the North Terrace in proximity of Trench 14.¹²¹ Excavation exposed the remains of a stair that allowed users to reach the top of the North Terrace from the area in which T26 and T28 were found (Fig. 6.72). Only the first three upper steps were clearly recognizable. They were unearthed for a length of 12 m approximately. It cannot be ruled out that the stair, a monumental structure, could have been at least 15 m long. The upper step (SU316101) was reached at an elevation of 966.474 m asl. This was made by a row of quite regular stones placed along the same line to mark the terrace's limit and access the terrace's top. The second step from the top has completely collapsed: only debris and the stones used to limit its tread remained. The third step from the top was instead better preserved: it shows that steps, except for the upper one, were made by a row of quite regular stones placed to retain a filling of soil and rubble whose surface was regularized. Traces of a fourth step can be also seen but they are too scanty. From this point downward, all what remained of the stair's lower part was almost completely collapsed. The steps unearthed allowed us to calculate threads of c. 80 cm-1 m and risers of c. 30 cm for each step. A user walking on such a stair could be able to rise for about 2 m from down to top. Even if it does not equal the size and monumentality of the stairs unearthed in other terraced sanctuaries, such as Bard-e Neshandeh, Majid-e Sulayman and Qal'eh-ye Bardi, the stair discovered in Trench 18 had patently the same function.

6.6 The area of Terrace 4 (*J. Mehr Kian*)

Terrace 4 is one of the most remarkable terraces of Kal-e Chendar, though it is not among the biggest. It extends for about 5.200 m², roughly measuring 70 × 75 m. Its square layout is clearly perceptible as its east retaining wall still stands for about 8 m over the present sloping ground. Terrace 4, the easternmost identified by our survey, is more than 100 m south-east of the North Terrace, and it appears as the furthest monumental structure built at the site toward the Rud-e Shami: from this point eastward, the terrain slopes more steeply than in other areas to reach the now exhausted riverbed. Ground contour lines derived by topography seem to indicate that a small structure, probably not exceeding 50 m², was built at the terrace's centre (see chapter 4.4); unfortunately, we couldn't explore such a context, as a modern enclosure¹²² was built exactly in that point, probably using stones retrieved from ancient masonries. We rather explored the area west of the terrace, given the presence of looted tombs.

6.6.1 Trench 10 (*M. Faraji, J. Mehr Kian, M. Rohuani Rankouhi*)

Trench 10 (Figs 6.143-6.144) was opened west of Terrace 4, about 110 m south-west of the North Terrace, in a point where a cluster of tombs (among which T24, T25 and T27) had been recognized during our survey at the site. The trench, initially measuring 4 × 4 m and then widened up to 23 × 12 m, was opened to verify such a cluster. Just in the subsurface, the excavation revealed the presence, along with tombs, of a multi-roomed building (Fig. 6.145). The building's walls were made of undressed stones of different size and format, laid on a single course and usually preserved for one row (Fig. 6.146). If, as a rule, stones laid in the walls' texture are of middle- or small size and roughly cut, some more regular stone blocks, larger in size and sometimes polished, can also occur: the latter blocks were clearly reused in this building after having been retrieved from more ancient structures. This is a practice that we have documented in other buildings discovered at the site, such as the roomed buildings unearthed in Trenches 12, 13 and 14. Along with reused blocks, also a broken small door socket was found in one of the unearthed walls (SU10): this could have been retrieved from one of the tombs. All these walls are very precarious structures, as their masonry appear quite unstable.

¹²¹ Trench 18 has been excavated and documented by the Iranian team only. Fieldwork was conducted independently, beyond the joint schedule. Excavators decided to list stratigraphic units according to a system that differs from the one followed jointly.

¹²² Probably built to store crops after harvesting.

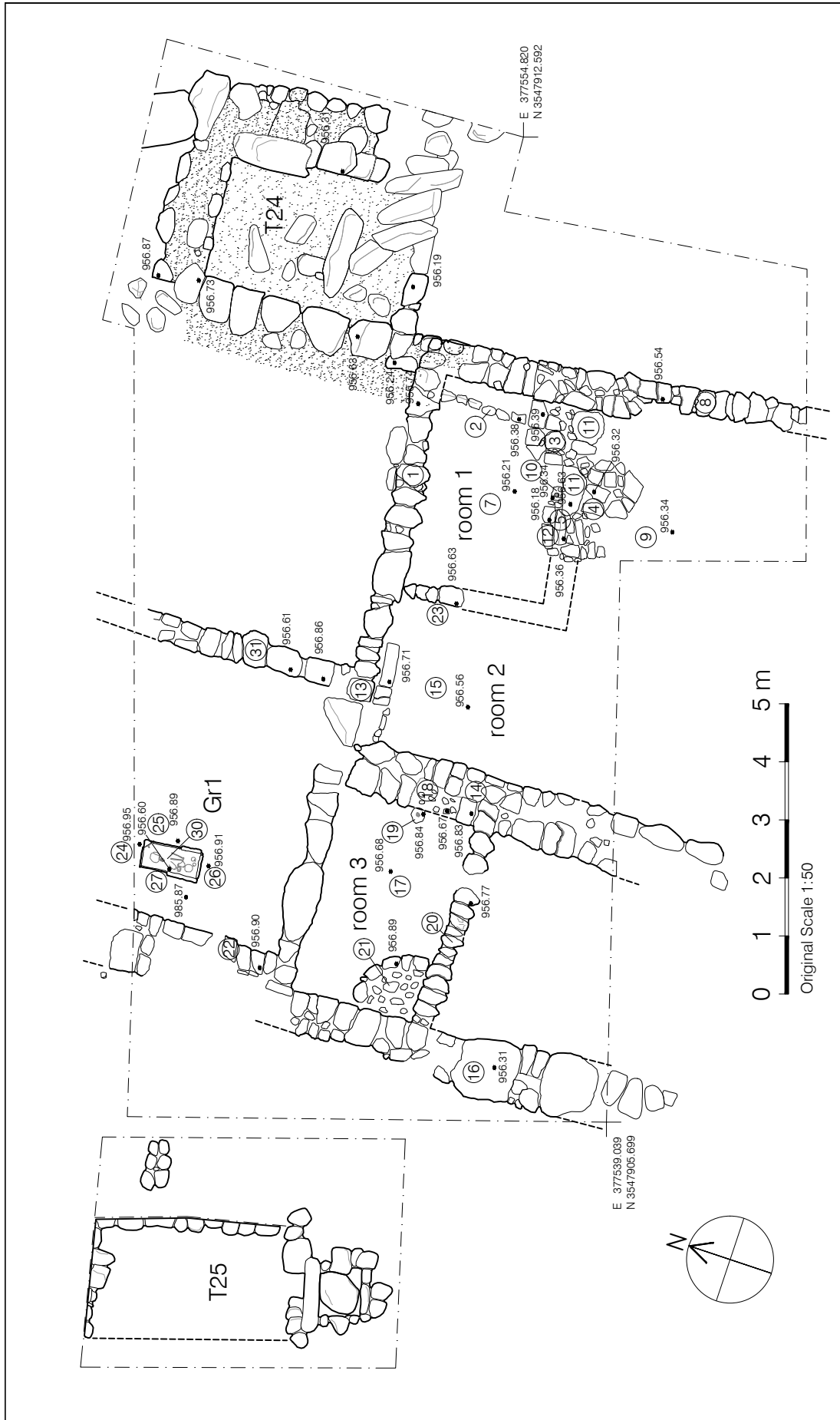


Figure 6.143 - Trench 10. Layout of the excavated area (scale 1:100)



Figure 6.144 - Trench 10. Aerial photo taken from UAV



Figure 6.145 - Trench 10 from the northwest



Figure 6.146 - Trench 10. Room 1. Walls SU8, SU1 and SU11 from the south

At least three rooms have been recognized in the building. These are small spaces in connection with three larger areas that must be identified as courtyards. Some walls seem to extend beyond the excavation north and south limits, so that the building layout is not completely known. Rooms are rectangular in shape, each measuring 3.5×2 m approximately, and are disposed between spaces that because of their extension could hardly have been covered by a roof. The space south of the rooms extends at least for 50 m^2 , measuring $7 \times > 7$ m, the spaces north of the rooms measure $5 \times > 5$ m each. Their perimeter walls could hardly have been developed in height and couldn't support any type of roof, given their reduced width (< 50 cm) and their unstable masonry. Instead, a light roof (maybe of perishable material), can be postulated for the rectangular rooms, whose inner space does not extend for more than 7 m^2 .

When the weakness of perimeter walls is considered (Fig. 6.147),¹²³ it may be supposed that this building was built for sporadic occupation. Such an occupation must be dated to a period of abandonment of the cemetery. The finding of surface potsherds, always in low occurrence,¹²⁴ and the presence of daily use objects, like a kiln separator (chapter 7, Fig. 7.1), and fireplaces at the corner of two rooms,¹²⁵ induces one to postulate that this was a domestic context. Stratigraphic information also points to the possible reuse of tombs in such a later context. Indeed, the building's east perimeter wall (SU8), whose top was identified at 956.54 m asl, was laid against the south-west corner of T24, in continuation of the tomb's west wall (Fig. 6.148). This was a later addition to the pre-existing tomb, which allowed builders to put the ancient tomb's entrance in connection with the open space limiting the building to the east. This addition could have happened because the tomb's walls were visible when the building was constructed: the tomb's west perimeter wall became indeed the limit of one of the building's courtyards. This is worthy of note, as it may be deduced that the tomb's funerary chamber, likely abandoned since long time and void of its original contents, could have been reused

¹²³ One can see walls SU20 and SU31 for instance, reached at an elevation of 956.77 and 956.61 m asl respectively.

¹²⁴ Rare potsherds mixed with bone animals were also found on a floor (SU7) in connection with a fireplace. One of them could be of Parthian date (but it is probably intrusive), the others are undatable. Sherds of cooking pots, likewise undatable, were also found on the floor of one of the small rooms (SU 17).

¹²⁵ SU3 and SU21 at 956.39 and 956.89 m asl respectively.



Figure 6.147 - Trench 10. Room 1. Wall SU 1 from the north



Figure 6.148 - Trench 10. Wall SU8 from the north



Figure 6.149 - Trench 10. T24. Aerial photo taken from UAV

(maybe as a storage place?) in this later phase. The absence of archaeological materials does not help to understand such a context more thoroughly.

T24 is a semi-underground tomb that had been repeatedly pillaged over time (Figs 6.143, 6.149), as attested elsewhere at the site. It was found in a very bad state of preservation, as its walls were heavily ruined or partly dismantled. The tomb's roof, which was likely of the same type of the saddle roofs identified in other tombs (T23, T26, T28), was made of oblong slabs, completely collapsed into the tomb's funerary chamber (Fig. 6.150). Slabs had been in all evidence destroyed by looters to enter the tomb. The funerary chamber could be entered through a passage in the tomb's south wall. Here a threshold was identified under the roof's slabs at an elevation of 956.190 m asl. The chamber can be entered via a path (or corridor) open to the sky, parallel to the tomb's south wall. It is very interesting to see that the tomb's threshold is at an elevation higher than the supposed path's ground, which probably put T24 in connection with other ancient structures (such as other tombs).¹²⁶ Also in this case, the tomb's façade was thus visible from the exterior and only part of the roof could have been buried under the terrain's slope. T24 may be part of a funerary complex.

The funerary chamber, north-south oriented, measures about 4 × 2 m, even if its south limit is unclear, for it has been destroyed by the roof's collapse (Figs 6.151-6.152). Perimeter walls, built in the usual

¹²⁶ Such a path (or corridor) continues in an east-west direction beyond the excavation limits.



Figure 6.150 - Trench 10. T24. Collapsed roof of the tomb during excavation



Figure 6.151 - Trench 10. T24. Funerary room during excavation from the southeast



Figure 6.152 - Trench 10. T24. Funerary room during excavation from the southeast

manner with undressed stones, are very thick (as a rule, c. 80 cm), so as to support the heavy slabs of the roof. A low funerary bench was laid against the north wall. It is remarkable that no funerary goods or bone fragments were found in the chamber, as this was probably made void of its content. A hinged stone door, still well preserved, was found in superficial layers on the remains of the tomb's east wall (Figs 6.153-6.154): the door, a monolithic block of about $76 \times 100 \times 20$ cm, must have been moved in the point where it was found from its original position, at the entrance of T24.¹²⁷ The door's outer face is carved with a cross pattern attested also in other occurrences (such as in the in situ door of T26). Such a pattern, probably replicating a wooden frame embodying four panels, implies that the door was well visible when it blocked the tomb's entrance. A lock-hole is carved on the door's side.

The presence of another tomb, yet unidentified or more probably completely lost, must be postulated north of the excavated courtyards of the roomed building. Here the context is heavily disturbed and such a tomb had been probably fully destroyed by looters. However, there is clear indication that a tomb existed because in the building's west courtyard a child cist grave was found that parallels those discovered in Trench 15 (in clear connection in that point with T28 and, probably, other tombs). Such a grave (Gr1) must have been placed close to the entrance of a tomb whose entrance probably looked toward the south. The cist is made of flat stone slabs placed in the ground aside each other on their edges to delimit a small rectangular ditch north-south oriented (Fig. 6.155). Short sides are each delimited by a single slab, long sides are each delimited by two juxtaposed slabs. This is the same technique followed in Gr2 and Gr3, which are different because in that case baked bricks were used instead of flat stones. The grave measures c. $55 \times 128 \times 20$ cm. The cist was covered, only partially, by a single slab measuring $64 \times 44 \times 4$ cm, laid on its flat side. In the cist, a thin filling layer containing scanty animal bone fragments and ashes, reached just below the surface at an elevation of 956.95 m asl, covered the skeletons of two children. These were laid on their side, in fetal position, and their skulls were placed one to the north and the other to the south respectively. Both skulls looked toward the

¹²⁷ Bucci et al. 2017, 24, fig. 20.



Figure 6.153 - Trench 10. T24. Hinged stone door



Figure 6.154 - Trench 10. T24. Hinged stone door. Detail of the lock-hole



Figure 6.155 - Trench 10. Gr1 seen from the above



Figure 6.156 - Trench 10. T25 from the southeast



Figure 6.157 - Trench 10. T25. Stepped corridor from the south



Figure 6.158 - Trench 10. T25 Stepped corridor and threshold from the south



Figure 6.159 - Trench 10. T25. Funerary chamber and roof during excavation

east. The cist, as the other two occurrences, must be dated to the Parthian period and thus predates the building in which it was found.¹²⁸

Less than 2 m afar from the roomed building's west wall, about 14 m west of T24, another tomb, already recognized, was investigated.¹²⁹ Such a tomb, named T25, was probably part of a small cluster of three tombs that included T24 itself and the tomb, not found, connected with Gr1. T25, likewise north-south oriented, is composed of a funerary chamber, measuring 4.20 × 2.10 m, and a narrow stepped-corridor, 1 m wide (Figs 6.143, 6.156-6.159). Three steps made of flat stone slabs, allowed users to reach the tomb's entrance. Again, this must have been a semi-underground structure. A niche measuring 40 × 40 × 40 cm was found in the corridor's east wall; it was blocked with small stones. Inside the niche, animal bone remains, mainly of lambs, were found. Such an arrangement and stratigraphic context parallel those of T23. Also in this case, the presence of animal bone fragments in the niche seems to suggest that rituals including animal sacrifices were performed in front of the tomb's façade. It may be also supposed that, at a given moment, the stepped corridor had been covered with stone slabs.

A single stone threshold of 90 × 70 cm connected the corridor with the main chamber. The entrance is limited by two stone jambs only partially preserved, roughly measuring 20 × 12 × 25 cm. A flat stone slab of c. 50 × 35 cm, found in fragments in surface layers, could have been here reemployed to block the entrance, as the original door, if any, had been lost since a given time, probably because the tomb was entered by looters: the entrance's lintel, a monolithic stone, is indeed broken. The chamber's perimeter walls are made of stone blocks: these blocks are bigger in lower courses to ensure the structure's stability. A saddle-roof made of almost five slabs for each side covered the chamber.

¹²⁸ Two miniature glazed vessels, placed as funerary goods above the first skeleton, were found that must be dated to the Parthian period. Unfortunately, both vessels have been looted before we would be able to document them.

¹²⁹ This has been excavated and documented by the Iranian team only. Fieldwork was conducted independently, beyond the joint schedule. Some information is lost.



Figure 6.160 - Trench 17 (=T27). Roof and destroyed funerary chamber

Three slabs were found still in their original position. On the chamber's rear wall, two ledges stand at different elevations: this feature seems peculiar of T25, as it is unattested in other tombs of the site up to now. The first ledge is a single stone slab of $62 \times 30 \times 15$ cm that was placed at the middle of the rear wall; the second ledge, measuring $40 \times 34 \times 11$ cm is placed east of the first one and it was broken. A stone base discovered close to the ledges is worthy of mention as it may be what remains of cultic activities or funerary ceremonies; objects likewise used in such a context were indeed also found in T26.¹³⁰ In the filling layer of the chamber, fragments of human bones, also including a skull and parts of legs and arms were identified. No funerary benches were found.

6.6.2 Trench 17 (=T27) (*M. Rohuani Rankouhi*)

T27 is located north of Trench 10.¹³¹ The tomb was already recognized during our survey as it was almost destroyed by repeated pillaging (Fig. 6.160). The funerary chamber, measuring c. 3.50×1.90 m, had an entrance east oriented (SU31904) at an elevation of 957.096 m asl. Perimeter walls (SU31907, SU31909 and SU21908) are built with roughly cut stones and are c. 40 cm wide. The rear wall (SU31902 at 957.036 m asl) is 1 m long. The chamber was covered by a saddle roof, still quite well-preserved in the west and central parts. The roof was made of long stone slabs, each measuring c. 100×60 cm. Slabs close to the entrance were removed by looters to enter the tomb and were found collapsed on the chamber's ground. Funerary goods are lacking except for a carnelian bead (chapter 9, no. 12/SO88) in SU32710.

¹³⁰ This was unfortunately not catalogued.

¹³¹ Trench 17 has been excavated and documented by the Iranian team only. Fieldwork was conducted independently, beyond the joint schedule. Excavators decided to list stratigraphic units according to a system that differs from the one followed jointly.

Chapter 7

The Pottery of Kal-e Chendar

Alessandra Cellerino

7.1 Introduction

The pottery found during three excavation campaigns (2013-2015) constitutes the most common funerary objects found in some of the investigated tombs (T7, T9, T20, T23, Gr2) (Fig. 11.23). Potsherds also come, to a lesser degree, from investigated stratigraphic contexts, alas deeply disturbed.

Chronological sequences rather than on internal criteria, complicated by the stratigraphic situation of the site and by the tombs' plundering, are therefore essentially based on comparisons with materials from sites that have a more coherent and reliable stratigraphy. Comparisons with pottery from other sites, which were considered from a morphological as well as historical points of view, are the starting point to circumscribe areas of ceramic influence and tradition. The study of materials associated with ceramics is also fundamental, especially funerary objects such as personal ornaments and glass or metal containers.¹

During our excavations 303 pottery fragments and 36 complete or semi-complete vessels were collected (339 samples in total). Pottery from tombs forms 52.80% of the samples found (179 occurrences). In addition to the 36 complete and semi-complete vessels, all diagnostic fragments, namely rims (99 fragments), bases (37 fragments), decorated body sherds (7 fragments) and handles (9 fragments), have been drawn (152 fragments in total) and photographed. All the pottery found, including 151 body sherds, was catalogued in a Technological Ceramic Form designed for the Kal-e Chendar's finds. Such a form includes a wide number of dBase fields to enhance the description of the ceramic characteristics as much as possible.

The need for accurate analysis of pottery assemblages discovered in different contexts of the site led to the creation of an affordable filing system since the very first season of excavations in 2013.² A dBase was designed to collect and manage information related to single occurrences and complete or half-complete vessels alike. Software suitable for our research allows the link of tables and images, including hyperlinks, and makes available lists from a controlled vocabulary to retrieve information from our dataset thanks to complex queries. Our dBase is compatible with GIS environments and can be easily integrated in spatial enquiries; it is also widely compatible with other software as contents can be exported in XLS and XML formats. The main table created to enter records (the Technological Ceramic Form) incorporates fields describing with a high degree of accuracy technical features of the ceramic items along with information on preservation, restoration procedures (when applicable), and findspots.

The first section 'General and Sherd Type' collects the identification data, i.e. the progressive number of the form, the date of compilation and the name of the compiler. The stratigraphic data (locus and stratigraphic unit), the inventory number and a P number in the case of a complete or semi-complete vessels, the ware class (in the case of Kal-e Chendar: Glazed Ware, Red Slip Ware, Common Ware, Cooking Ware), the supposed shape of the vessel, the decoration, the graphic and photographic documentation, and the chronological indications (when possible) are indicated below.

¹ See chapter 9.

² The database was created specifically for the pottery from Kal-e Chendar by Vito Messina, Ilaria Bucci and myself.

In the second section 'Preservation and Measures' the sherd type and the alterations of the surface are indicated. Measures (heights, diameters and thicknesses) with the percentage of conservation are recorded. Any restoration is also indicated.

In the third section 'Raw Materials' the characteristics of the fabric are recorded: hardness, texture and porosity. Then the characteristics of visible inclusions are indicated.

The fourth section 'Manufacturing Technology' indicates the regularity of the shape of the vessel, the form of the fractures (vertical, oblique, horizontal). These elements allow to hypothesize with greater certainty the manufacturing technique of the vessel which is indicated below (wheel-made, hand-made, coil-made, etc.)

The fifth section 'Manufacturing Technology: Surface' describes the treatment of the surface of the vessel. The presence and colours of slip, glaze or painting are therefore indicated there.

The sixth section 'Decoration' describes the decoration technique (incising, impressing, molding, painted decoration), the decorative motif and the position of the decoration with respect to the vessel.

The seventh and last section 'Firings and Colours' describes the colour of the surfaces and core using the Munsell Colour System. The firing atmosphere (oxidizing or reducing) is then indicated.

References to the graphic and photographic documentation produced by the team members were also included, and photographs of the most significant pieces were attached to the records.

All the inventory numbers were registered, which include three numbering systems: a progressive form number reflecting the input order into the database; a topographically meaningful identifier, that allows to trace back the provenance of the entries (ID); and a pottery number (P) for the complete and half-complete vessels. In addition to these, another identifier (Previous ID) was added, especially when fragments of the same vessel were found at the same location but in different areas or during successive campaigns. From the main table, a form and a report were created too, so to have an easier interface to compile the fields and display the information through the former and print the contents or a selection of them through the latter. In order to uniform as much as possible the data entry and to simplify the search paths for queries, updating of the data sheets, lists of values were established at the beginning of the cataloguing process and stored in secondary tables connected to the main table and to the form as combo boxes. In this way, the great majority of the fields offer the users a drop-down list of values to choose from, ensuring the consistency of the vocabulary and enforcing the referential integrity. The perks of such a structure also included the possibility to expand or change the values in the secondary tables according to the specific features of the pottery assemblages at the site, making the contents more manageable and easily modifiable, and greatly favouring the entry and updating of data by different users during the years. The cataloguing system adopted by the expedition proved, therefore, to be fundamental to further analysis and interpretations based both on typology and context, allowing to easily extrapolate data and evaluate the recurrence of specific features and attributes.

Four ceramic classes were identified on the basis of the surface treatment or the technical characteristics of the fabric: Glazed Ware, Red Slip Ware, Common Ware and Cooking Ware.³

The pottery is largely wheel-made, and wheel marks are often visible on the pottery walls. Only some fragments of coarse fabric are hand-made. Mineral or organic temper or, in most cases, a mix of both, were added to increase the malleability and strength of raw clay.

³ For the chemical and petrographic analysis on selected fragments see chapter 8.

The ware's texture ranges from fine to coarse, the clay having been tempered by a mixture of organic (chaff, in particular) and mineral (usually sand, but even well visible granules of calcite and mica) components.

The ware with a medium texture and mineral-organic inclusions is the most frequent ware, forming 43.65% of all the potsherds found (148 out of 339 fragments), while medium fabric with exclusively mineral inclusions (9 fragments) are rarely attested, forming 2.65% of the total.⁴

The fine and homogeneous fabric with very few traces of mineral-organic temper (99 fragments) forms 29.20% of the potsherds found. The fragments with mineral inclusion and fine texture are only 11 representing 3.24%, while a coarse fabric tempered with both organic and mineral inclusions (44 fragments) forms 13.97% of the total. Several fragments, (38 in Common Ware; 9 in Red Slip Ware; all the sherds belonging to the Cooking Ware, representing 22.12% of the total), have a dark core, even black in some cases, being well visible in section giving a layered effect. This colour is originated by incomplete removal of carbonaceous matter, which is the result of the incomplete firing or relatively low temperature.

The colour of surfaces and core of the vessels are described using the Munsell Soil Colour Chart, with both the number and the terminology indicated by the chart. Brown, buff and red-pinkish are the most frequent colours of the fabric,⁵ indicating the firing of vessels in oxidizing atmosphere.

All vessels in the catalogue have been illustrated at a scale of 1:3.

7.2 Glazed Ware

Glazed Ware pottery⁶ is the most frequent ware, forming 35.69% of the total of the pottery found (121 occurrences out of 339). Glazed pottery was mostly found as funerary gifts in the excavated tombs and the glazed vessels form 80.55% of the complete pottery found (29 vessels out of 36).

Most of glazed pottery has a fine to medium fabric with mineral-organic inclusions (fine: 54; medium: 58; medium-coarse: 3). The fabric has a pale brown (Munsell Colour 2.5Y 7/3 - 7/4 - 8/3 - 8/4) to very



Figure 7.1 - Clay separator from Trench 10

⁴ The mineral organic fabric is labelled M/O and the mineral fabric M on the pottery catalogue.

⁵ The colour of the fabric depends for the most on the clay mixture, the temper used (organic, mineral or a mix of both), the temperature and atmosphere (oxidizing or reducing) of the kiln. See for instance: Rice 1987, 343-346; Cuomo di Caprio 2007, 122-124; Orton, Hughes 2013, 134-140.

⁶ Davit et al. 2020; Cellierino 2022, 160-163.

pale brown colour (Munsell Colour 10YR 7/3 - 7/4 - 8/2 - 8/3 - 8/4) or in some case a pink (Munsell Colour 7.5YR 7/3 - 7/4 - 8/3 - 8/4) to yellowish colour (Munsell Colour 5Y 8/2 - 8/3 - 8/4).

The most common colours of the glaze are yellowish green (35.53%), various shades of blue and turquoise (28.92%), white (18.18%) and green (10.74%). The glaze covers both the exterior and interior surface of the vessel; a second layer of glaze was sometimes applied around the top, causing typical decorative drops around the rim. The spur mark left by the clay triangles used as separators (Fig. 7.1)⁷ to keep the vessels erect in the kilns or to piled up the open forms, are often present on the internal floor or on the base.

In most cases the glaze has lost its colour and has assumed a decomposed whitish, sometimes opalescent, tinge. A network of fine lines is commonly visible on exterior and interior walls produced by the unequal expansion during firing and subsequent cooling between body and glaze. It is therefore possible that the white glaze, especially when it is badly preserved, flaked and cracked (22 occurrences), represents what remains of an originally pale blue or yellow glaze.⁸

The making of Hellenistic and Parthian glazes perpetuates the Mesopotamian long-lasting tradition of alkaline glazing that becomes particularly appreciated since the Neo-Assyrian and Neo-Babylonian periods.⁹ The technological characteristics of Mesopotamian silica-soda-lime glaze (calcareous clay fabric, glaze consisting of silica as the vitrifying agent, soda rich plant ashes with high Magnesia and Potash contents as the flux, and copper, iron and manganese oxides as the main colouring agents) remain substantially unchanged from the second half of the 2nd millennium BCE up to the Sasanian and early Islamic era. The high occurrence of alkaline glazed ware attested also in the pottery assemblage of the Susa plain, includes the highlands of Khuzestan in what Lise Hannestad calls 'the glazed ware area'.¹⁰

The production of glazed pottery significantly increased from the 4th century BCE. Glazed vessels from the end of 3rd and the beginning of the 2nd century became very common and the glazing achieved a better quality than in the Neo-Babylonian and Achaemenid periods.

White seems to be the most common colour in southern Mesopotamian sites such as Ur, Nippur, Larsa, Seleucia on the Tigris, Abu Qubur, Tell ed-Der and Babylon during the late Achaemenid and Seleucid periods.¹¹ Also the white, yellow-greenish, turquoise glazed pottery found during the excavations of the Hellenistic fortress at Failaka in the Persian Gulf (half of 3rd century to the end of 2nd-beginning of 1st century BCE) places the production of the settlement in the sphere of influence of Mesopotamian glazed pottery, and show particular comparisons with Susa.¹²

However, the pottery finds in the Achaemenid levels of Susa (*chantier de la 'Ville Royale II'*)¹³ testify that white glaze seems to be equally widespread in the Achaemenid period as in the Seleucid phase while yellow glazed pottery is particularly common in the Achaemenid level (Apadana Est, level 6, Ville Royale II, levels 5 and 4).¹⁴ Yellow glaze lost popularity in the Seleucid period (level 3 of the Palace on the Chaour for which a dating between the end of the 3rd and the beginning of the 2nd century BCE has been suggested and level 5e of the Apadana Est), disappearing definitively in the next level (Apadana Est, level 5d), dated from the half of the 2nd century to the half of the 1st century BCE, when turquoise glaze¹⁵ gained much favour as in the pottery assemblage from Kal-e Chendar.

⁷ A clay triangle (S073, Fig. 7.1) was found in the surface layer of Trench 10 (core colour 2.5Y 7/4; surface colour 2.5Y 8/6; 7 x 5.6 cm).

⁸ Lecomte 1987, 230.

⁹ See e.g. Nunn 1988, 142-156; Moorey 1994, 159-162; Hausleiter 2010, 261-264.

¹⁰ Hannestad 1983, 107-112.

¹¹ See e.g. Woolley 1962, 90; Gibson 1975, 16-76; Lecomte 1983, 306; Lecomte 1987, 229; Haerincq 1980, 71; Valtz 1984, 41; Rutten 1996, 9.

¹² Hannestad 1983, 13-14.

¹³ de Miroschedji 1987, 22.

¹⁴ According to de Miroschedji, yellow glaze could be the 'couche d'appret' of a white glaze (de Miroschedji 1987, 22).

¹⁵ According to Haerincq in the middle Parthian phase (150-end of the 1st century BCE) the range of glaze colours became wider (Haerincq 1983, 43).



Figure 7.2 - Glazed plate no. 1

In the pottery production dated to the Middle Hellenistic period from Larsa, the yellow glaze appears to be completely absent.¹⁶ It is therefore possible that yellow glaze was produced in a well-defined period, from the 4th century BCE to no more than the end of the 3rd century or the middle of the 2nd century BCE.

In the levels of late Parthian period of the Ville Royale II dated to the 1st centuries CE (levels 3A-2) and Apadana (levels 5b, 5a and 4) datable between the middle of the 2nd century and the mid-end of the 3rd century CE, two new classes of glazes appear, intense blue and bright olive green in colour, associated with a repertoire of forms characteristic of the final phase of the Parthian period and the early Sasanian age,¹⁷ absent from the pottery found at Kal-e Chendar.

According to Haerinck, in the ancient phase of the Parthian period in south-western Iran, which he dated to 250-150 BCE, blue glazed pottery is completely absent while green or yellowish-green glazing seems to be the most widespread. In the middle Parthian phase (150-end of the 1st century BCE) the range of colours is wider and various shades of turquoise and light blue appear, the presence of which can be therefore considered a dating criterion. Typical of the late phase of the Parthian age (1st century-about 225 CE) is instead an intense green glazing, very vitrified and practically transparent, absent from Kal-e Chendar.

In the so called 'glazed area' the ancient glaze technique was used to produce types which reflect continuity with the previous morphological traditions, and pottery forms inspired by Hellenistic Western prototypes, widespread in the Mediterranean from the 4th-3rd century BCE. It is noteworthy that only at Susa, in the Hellenistic levels of the Apadana Est and Ville Royale, has been found a limited production of black glazed pottery imitating the black glaze of the Greek vases.¹⁸ This choice, unattested in other large sites of Mesopotamia and Elymais during the Hellenistic period, probably did not meet the local taste.

7.2.1 Open forms

Open forms represent 47.5% of the diagnostic sherds and vessels in Glazed Ware. The open forms represent 41.37% of the 29 complete vessels.

Plates (Fig. 7.26: 1-4)

This shape is relatively widespread and was produced in two variants. Plates can be more or less deep. The wall is often fairly steep so that it becomes more a bowl than a plate. The plates nos 1 (Fig. 7.2), 2, 3 have a plain thickened rims varying in diameter from 19 to 22 cm. The complete one, no. 1, is 5.9 in height. The wall is straight, the rim continuing the curve of the wall being slightly thickened. Plate n. 1 has a central low depression surrounded by two incised concentric

¹⁶ Lecomte 1983, 230.

¹⁷ Haerinck 1983, 51.

¹⁸ Boucharlat 1987, 187.

circles. The type finds comparisons in Failaka where it is one of the most common forms during Period I, dated around the middle of the 3rd century to the early 1st century BCE.

An example in common pottery comes from the Palace of Artaxerxes on the Chaour datable at the end of the 3rd and the middle of the 2nd century BCE¹⁹ and some specimens²⁰ were found in the disturbed layers of the nearby site of Hung-e Azhdar excavated by the Iranian-Italian Expedition.²¹

The glazed types appeared in Susa only at the end of the middle Parthian phase or in the last phase of the Parthian period (Apadana Est, level 5b; Ville Royale II, level 3A) datable to the 1st century CE,²² which is surprising considering the popularity of the type in the basal levels of the Hellenistic Fortress in Failaka.²³

The plates found at Uruk in level IIB, belonging to the 2nd century BCE,²⁴ but also in the Gareus Temple, which Finkbeiner dated to the late Parthian period (50-225 CE), show only limited modification, suggesting that they were produced for a very long time. The form is probably borrowed from the Attic rolled-rim plate that was one of the most popular shapes during the Hellenistic period.²⁵ There is a great range of size and rim variations among these plates, always black glazed, imported from Attica or locally produced also in Near Eastern sites.²⁶ The best comparisons found are plates from the Athenian Agora dated between the second half of the 2nd century and the first two decades of the 1st century BCE.

Comparisons²⁷ for nos 1-2:

Susa: A VI-B/5-2-52, locus 153, 1st century-225 CE (Haerincx 1983, fig. 8: 3); Apadana Est, level 5b, beginning-half 2nd century CE (Boucharlat 1987, fig. 70: 2).

Uruk: Gareus Temple, 50-225 CE (Finkbeiner 1991, 497: 364); J 18 e1 area, 125-50 BCE (Finkbeiner 1991, 619: 208).

Failaka: Hellenistic Fortress, half 3rd century-beginning 1st century BCE (Hannestad 1983, pl. 22: 244-245, 250).

Athens: Athenian Agora, second half of 2nd century-first decade 1st century BCE (Rotroff 1997, fig. 49: 688; fig. 50: 699).

Comparisons for no. 3:

Susa: Artaxerxes Palace, level 3, 3rd century-first half 2nd century BCE (Boucharlat, Labrousse 1979, fig. 29: 14); Apadana Est, level 5c, second half 1st century BCE-first half 1st century CE (Boucharlat 1987, fig. 65: 1); Ville Royale II, level 3A, second half 1st century BCE-first half 1st century CE (de Miroschedji 1987, fig. 25: 8).

Uruk: U/V 18 area, Grab 342, level IIB, 3rd century-125 BCE (Finkbeiner 1992, 559: 830).

Failaka: Hellenistic Fortress, half 3rd century-beginning 1st century BCE (Hannestad 1983, pl. 22: 25).

Plate no. 4 (Fig. 7.3) belongs to a type to which is attributed the conventional name of fishplate. The rim is triangular in section and the disk base is a near-eastern regular feature that replace the ring base of the prototypes. The fishplate is one of the most widespread forms in the Hellenistic world and represents a case of adoption by local potters of a genuine Greek type. The original Greek version appears in the late 5th century-beginning of the 4th century BCE,²⁸ in the Attic Red Figure

¹⁹ Boucharlat, Labrousse 1979, 78.

²⁰ Cellerino 2015, 132, fig. 2: 12-15. The pottery was dated, mainly by comparisons, from the late Iron Age to the early Parthian period.

²¹ Messina (ed.) 2015.

²² Boucharlat 1987, 201.

²³ Hannestad 1983, 33.

²⁴ Finkbeiner 1993, 7, tab. 2.

²⁵ Rotroff 1997, 142-145.

²⁶ Hannestad 1983, 32-34; Rotroff 1997, 143, note 6.

²⁷ Comparisons are listed in geographical order (Elymais-Khuzestan sites, other Iranian sites, Mesopotamian sites, Gulf sites, Greek sites), within these categories they are listed alphabetically.

²⁸ Hannestad 1983, 29.



Figure 7.3 - Glazed fishplate no. 4

corpus.²⁹ In the Near East the fishplate³⁰ was produced in Glazed Ware, rarely in Common Ware,³¹ from the first half of 3rd century BCE.

The central depression³² characteristic of the type, is omitted in plate no. 4 and on the floor there is only an incised circle. The rim diameter of 24 cm places it among the dishes with a larger diameter that in Failaka belong to the 'BI group' dated by Hannestad to the middle Parthian period, (end of the 1st century BCE-1st century CE),³³ characterized by a thick dark green glaze that finds close comparisons with a very similar ware from Susa.³⁴ The fishplate from Kal-e Chendar, whose morphology is similar to the plates from Failaka, is otherwise covered with a turquoise glaze such as, for example, the fishplates from Babylon or Seleucia on the Tigris, where the type already appears 'in the lowest layers ...'³⁵ or from Larsa,³⁶ and the Seleuco-Parthian level II of Uruk.³⁷

The date in which the fishplate, as other Western shapes, began to be produced in ancient Near East is a matter of debate, but a period between the end of the 4th-beginning of 3rd century BCE is generally accepted. Certainly, fishplates continued to be made throughout the Parthian period. At Susa, they are scarcely attested in the Seleucid 5e level of Apadana Est when they are produced in Black Glazed Ware in imitation of the Greek black glazed prototypes, while their production seems to increase in the early Parthian period.³⁸ De Miroschedji considers the fishplates as 'fossiles directeurs'³⁹ of the 3rd-2nd century BCE but indicates their presence still in level 3A of the Ville Royale II, dated to the 1st century CE. It is noteworthy that at Seleucia on the Tigris,⁴⁰ from the deeper levels up to the levels of the 1st century CE, the fishplates are produced in turquoise Glazed Ware as the plates found at Kal-e Chendar. The fishplates coming from U/V 18 area in Uruk, dated to the 2nd-1st century BCE, are quite similar, both in shape and glazing colour, although a ring base is more frequently attested than the disk base of the Kal-e Chendar fishplate.

²⁹ Rotroff 1997, 146-150.

³⁰ For an analysis of the type see Hannestad 1983, 29-32.

³¹ 'Ces formes se rencontrent principalement dans la ceramique a glaçure, comme c'est le cas en general en Orient', (Boucharlat 1987, 197). Rutten (Rutten 1996, 10) underlines, regarding the pottery from Tell ed-Der, dated to the second half of the 3rd century BCE, the relative frequency in Mesopotamia of fishplates produced in Common Ware during the Seleucid period.

³² Lecomte, studying the pottery from Larsa dated to the 2nd century BCE, suggests that the depression is an 'older morphological feature', which persists into the end of the 2nd-beginning of the 1st century BCE (Lecomte 1993, 21).

³³ Hannestad 1983, 78.

³⁴ Hannestad 1983, 28.

³⁵ Valtz 1984, 42.

³⁶ Lecomte 1987, 230.

³⁷ Finkbeiner 1993, 7, tab. 2.

³⁸ Boucharlat 1987, 197

³⁹ de Miroschedji 1987, 43

⁴⁰ Valtz 1984, 42, fig. 1, nos 7-8.

Comparisons for no. 4:

Susa: Artaxerses Palace, level 3a, 3rd century-first half 2nd century BCE (Boucharlat, Labrousse 1979, fig. 34: 6); Ville Royale-Apadana, level 6, 5th century BCE (Boucharlat 1987, fig. 59: 12); Ville Royale-Apadana, level 5, 5th century BCE (Boucharlat 1987, fig. 63: 7); Ville Royale II, levels 3D-3A, 2nd century BCE-beginning 1st century CE (de Miroschedji 1987, fig.19: 6; fig. 25: 3-6).

Babylon: Shu-Anna, Seleucid levels (Cellerino 2004, fig. 6: 15-17).

Larsa: E-Babbar, court VII, 2nd century BCE (Lecomte 1987, pl. 2: 3-4); Hellenistic house 1, room 2, 2nd century BCE (Lecomte 1989, pl. 7: 12).

Nimrud: levels 1-2, 145-post 140 BCE (Oates 1968, fig. 15: 33; fig.16: 69).

Seleucia: Parthian levels (Valtz 1984, fig. 1: 7-8).

Tell ed-Der: tomb 345, middle 3rd-half 2nd century BCE (Rutten 1996, fig. 2: 1).

Uruk: V 18 a1 area, level II, 125-50 BCE (Finkbeiner 1992, 574: 977).

Failaka: Hellenistic Fortress, half 3rd century-beginning 1st century BCE (Hannestad 1983, pls 18-19: 198-207; pl. 46: 455).

Bowls with band rim (Fig. 7.26: 5-9)

The bowls with band rim are a distinct class of five nearly identical complete bowls found in T23 (but some fragments have been also found in Trench 12) (Figs 7.3-7.7). The band rim, triangular in section, can be slightly concave (nos 7-8). The walls are slightly convex but in no. 9 (Fig. 7.7) they are straight. These are medium-sized bowls with a diameter ranging from 16.2 to 18.5 cm and a height of 7.8 to 10.2 cm. The triangular band rim is identical to that of many fishplates but the average ratio of height to diameter is about 1:3.5 for fishplate no. 4 and about 1:2 for these bowls. They have a low ring base except for no. 9 that has a disk base. The badly preserved glaze is always whitish-turquoise.



Figure 7.4 - Glazed bowl with band rim no. 5



Figure 7.5 - Glazed bowl with band rim no. 6



Figure 7.6 - Glazed bowl with band rim no. 7



Figure 7.7 - Glazed bowl with band rim no. 9

Anyway, even if there are not precise comparisons, the bowls belongs to a well-known type very popular in Mesopotamia and Iran from the Achaemenid period onwards.⁴¹ These deep bowls with convex or straight walls and plain, usually concave, rim above a carination were produced in Common and Glazed Ware also during the old and middle Parthian period.⁴² The best parallel is provided by a glazed bowl dated to the Seleucid period found by de Miroschedji during the French survey in the Khuzestan plain.⁴³

Comparisons for nos 5-9:

Choga Mish: Parthian level (Delougaz, Kantor 1996, pl. 70: K).

Khuzestan plain: KS-15, Seleucid period (de Miroschedji 1981, fig. 59: 3).

Susa: Apadana Est, level 5e, 3rd century BCE (Boucharlat 1987, fig. 57: 12).

Bowls with angular profile and outturned rim (Fig. 7.27: 10-14)

Bowls with outturned rim have concave upper wall and convex lower wall (Figs 7.8-7.11). The transition between these parts can be smoothed to angular. The rim is rounded and everted or, less frequently, triangular in section with a recess on the lip. The diameters are very similar, varying from 15 to 16.8 cm. The bowls have a lower ring base, in one case a disk base or an angular foot (no. 14). The carination in no. 10 is softened to a curve. The glaze, whitish-turquoise in colour, is partly flaked away and opalescent, only no. 10 has a greenish-yellow glaze. The bowls served as grave goods in Tombs T20, T23 and Gr2.

The bowl with angular profile and outturned rim was borrowed from a Greek type⁴⁴ produced in Attic and Corinthian black glaze from the end of the 5th century BCE. The type remains in vogue far into the



Figure 7.8 - Glazed bowl with angular profile and outturned rim no. 10



Figure 7.9 - Glazed bowl with angular profile and outturned rim no. 11



Figure 7.10 - Glazed bowl with angular profile and outturned rim no. 13



Figure 7.11 - Glazed bowl with angular profile and outturned rim no. 14

⁴¹ Hannestad 1983, 23-25; Cellerino 2004, 107.

⁴² Haerinck 1983, 32.

⁴³ de Miroschedji 1981, 171.

⁴⁴ See e.g. Hannestad 1983, 18; Valtz 1984, 42.

Hellenistic period although some change occurs over time. Until the first quarter of the 2nd century a gently curved profile was preferred, then the angular profile become favourite. Characteristic of the late 2nd century BCE are the short, nearly horizontal lower wall and the tall flaring upper wall; a general trend towards a deeper bowl is evident in the Attic series.⁴⁵

The bowls with outturned rim and angular profile found at Kal-e Chendar belong to the deep version of the type but a persistence until the 1st century CE of the lower version, almost always produced in Glazed Ware, is frequently attested in Mesopotamia and in south-western Iran, where the bowl was found at Uruk, Susa, Choga Mish and Majid-e Sulayman.⁴⁶

Produced throughout the Near East also in Common Ware, such as at Larsa, the type has been in production at Susa in the shallower variant from the beginning of the 2nd century BCE and was in use until the 1st century CE (Apadana Est levels 5e-5c).⁴⁷ At Seleucia the examples of this shape came to light in the IV to II levels, for which a date in the second half of the 2nd century BCE to the first half of the 1st century CE, has been suggested.⁴⁸

A unique comparison for no. 14 with a lower version of the type comes from Uruk, area Va XVIII, level I. According to the recent dating proposed by Finkbeiner,⁴⁹ level I of areas U/V XVIII is dated between 50 BCE and 50 CE during the middle Parthian period.

The bowls with angular profile produced in Red Painted Ware, which is the typical northern Mesopotamian fine ware during the Hellenistic period, are a popular type at Nimrud from the end of the 3rd until the end of 2nd century BCE,⁵⁰ mostly in the deep version, in some cases with a palmette stamp on the floor.⁵¹

Comparisons for no. 10:

Uruk: V 18 a1 area, level I, 50 BCE-50 CE (Finkbeiner 1992, 563: 885).

Comparisons for nos 11-13:

Choga Mish: Parthian level (Delougaz, Kantor 1996, pl. 70: N).

Majid-e Sulayman: north-west of the temple of Hercules, ca. 3rd century-150 BCE (Ghirshman 1976, pl. 38: GMIS199).

Larsa: E-Babbar, court VII, 2nd century BCE, Common Ware (Lecomte 1987, pl. I: 2).

Nimrud: level 4, about 215-175 BCE (Oates 1968, fig 15: 8).

Seleucia: levels II-IV, about 141 BCE-43 CE (Debevoise 1934, nos 209, 219).

Athens: Athenian Agora, first quarter 2nd century-early 1st century BCE (Rotroff 1997, fig. 61: 945, 948, 959).

Comparisons for no. 14:

Susa: Apadana Est, level 5e, first half 3rd century BCE (Boucharlat 1987, fig. 59: 13).

Larsa: E-Babbar, court VII, 2nd century BCE, (Lecomte 1987, pl. II: 1); room 24, 2nd century BCE (Lecomte 1987, pl. 20: 7).

Nimrud: levels 1-5, 2, about 215-after 140 BCE (Oates 1968, fig.15: 10-11).

Uruk: V 18 a1 area, surface-level I, 50 BCE-50 CE (Finkbeiner 1992, 576: 1031).

Failaka: Hellenistic Fortress, half 3rd century-beginning 1st century BCE (Hannestad 1983, pl. 4: 31).

Athens: Athenian Agora, first quarter 2nd century-end 2nd century BCE (Rotroff 1997, fig. 61: 947, 955).

⁴⁵ Rotroff 1997, 158-159.

⁴⁶ Haerinck 1983, 31.

⁴⁷ Boucharlat 1987, 195.

⁴⁸ Debevoise 1934, 9.

⁴⁹ Finkbeiner 1993, 7, taf. 2.

⁵⁰ Oates 1968, 64.

⁵¹ Oates 1968, 125.

7.2.2 Closed Forms

Little more than half of the rims in Glazed Ware belong to closed forms (52.5%). Most of the glazed closed forms were found primarily in the excavated tombs.⁵² The closed shapes form 58.62% of the 29 complete vessels. The types classified are jugs, amphoras, pilgrim flask, small amphoriskoi and pots.

Jugs (Fig. 7.27: 15-16; Fig. 7.28: 17-18; Fig. 7.29: 19-20)

The jugs made up a heterogeneous group of vessels which are all part of the T23 grave goods. Unlike the open forms, the closed forms are different from each other and therefore constitute unique pieces. These are medium-sized vessels with a height varying between 26 cm (no. 15) and 37 cm (no. 17). The glaze, badly preserved and opalescent, covers completely the internal and external surface of the jugs and is always turquoise or light blue in colour. The jugs have disk bases. The base of jug no. 17 is particularly high and decorated by a series of tiny ridges.

Jug no. 15 (Fig. 7.12) has a pear-shaped body decorated on shoulder by concentric incisions, a rounded rim with a ridge below. The neck is tall and the strap handle, from neck to shoulder, is round in section.

Jug no. 16 is not complete, the lower part of the body and the handle are missing, the lower attachment is visible on the shoulder. The rim is thickened, almost square in section. A pottery mark in form of a simplified anchor⁵³ is incised on shoulder.

Jug no.17 (Fig. 7.13) is almost complete. The straight lower wall angled into convex upper wall. The rim is thickened, almost square in section. The tall neck was made separately and the junction with the body is marked by a ridge decorated by impressions. The jug has a rope handle attached from neck to shoulder. The upper handle attachment is flanked by two pellets.



Figure 7.12 - Glazed jug no. 15

The disk footed jug no. 18 is not complete, the neck is missing. The body is globular. The strap handle lower attachment is flanked by two pellets.

Jug no. 19 has a squat, almost rounded body. The neck and the handle are missing, but the lower attachment of the handle remains on shoulder, flanked by four pellets. The joint of neck and shoulder is decorated by an impressed ridge.

The rounded squat jug no. 20 (Fig. 7.14) has broad neck and rounded rim provided of a pouring pinched spout positioned at 90 degrees to the handle. Pronounced wheel marks are visible on the inner wall.

The class of one handled jugs, with ovoid or pear-shaped body, deriving from western prototype such as the oinochòe, gained in popularity becoming one of the diagnostic forms of the

⁵² The same can be observed in the Parthian tombs of Choga Mish (Delougaz, Kantor 1996, 9).

⁵³ The anchor was a symbol of the Seleucid dynasty and appeared on coins and royal seals. The kings of Elymais continued to use the anchor symbol from the 2nd century BCE until the time of the Orodid kings of the 2nd century CE (Hansman 1990; van't Haaff 2007). See the coins nos 81-84 in chapter 9.



Figure 7.13 - Glazed jug no. 17

Parthian period throughout the Near East.⁵⁴ These jugs were produced in countless types and variants enriched by other sources of inspiration such as metalworking. The origin of the twisted rope handles and applied pellets, probably originally inspired by the studs' headed pins that fastened the handle in the metal prototypes,⁵⁵ is probably to be found in the Attic version of West Slope amphora and oinochòe. The pellets flanking the handle first appeared after 250 BCE⁵⁶ on West Slope examples, which were in Hellenistic age successful items of trade over the Eastern Mediterranean.⁵⁷ Jug no. 17, in particular, shares other specific features with the West Slope type: the presence of grooves on the shoulder and at junction of foot and body, the flaring neck and the ovoid body with high shoulder.

Comparisons for no.17:

Athens: Athenian Agora, after 250-last quarter 3rd century BCE (Rotroff 1997, fig. 34: 460, 465).

Amphoras (Fig. 7.30: 21-23)

The glazed amphora with vertical handles from neck to shoulder seems to be quite a popular type. The turquoise or light green glaze covers the exterior and the interior. The amphoras found in Kal-e Chendar have an ovoid body with a low ridge at the base of the neck. The neck is rather tall and narrow, the rim has a variety of profiles, the most common is rectangular or triangular in section with a projecting molding just below the rim. The two complete (no. 21) and semi-complete (no. 23) examples were part of the T23 grave goods.

No. 21 (Fig. 7.15) has a rim with a pinched spout, a common feature of the greek oinochòe. A ridge is placed at the base of neck and the strap handles are concave to the exterior or in some examples a double-handles, always from shoulder to the neck (made of two sticks of clay round in section), is preferred.

⁵⁴ Valtz 1993, 172.

⁵⁵ Rotroff 1997, 120, note 4, 124.

⁵⁶ Rotroff 1997, 125.

⁵⁷ Rotroff 1997, 121, note 9; Valtz 2002, 332.



Figure 7.14 - Glazed jug no. 20

The incomplete example no. 23 has a rim with a sharp ridge below and double handles (made of two sticks of clay round in section), from shoulder to neck. This type of rim is also produced in Mesopotamia in Common Ware associated with biconical or ovoid body (but also with the so-called Babylonian amphoras) as at Larsa in levels dated to the 2nd century BCE⁵⁸ and was still in production in the first half of the 1st century CE, as the parallels from Uruk attest.⁵⁹

No. 21 finds general comparisons with glazed examples found at Bard-e Neshandeh and Majid-e Sulayman, dated in the ancient phase of the Parthian period (250-first half 1st century BCE). The amphoras from these two sites of ancient Elymais are characterized by an ovoid body with rounded or angular shoulders and range in height from 13 to 23 cm. Therefore, they are smaller than no. 21. Haerinck suggests that they were designed,

during the ancient phase of the Parthian period, to contain perfumed oil and were replaced during the late 1st century BCE-1st century CE by the smaller pear-shaped amphoriskoi.

Among the closed shapes the amphora type represents an innovation in the oriental ceramic repertoire.⁶⁰ Borrowed from Hellenistic types of the late 4th-early 3rd century BCE the glazed amphora is a distinctive appropriation of a Greek form that led to the creation of manifold simplified versions of the prototypes in Mesopotamia, Iran and the Persian Gulf during the Seleucid and Parthian period. The Kal-e Chendar type no. 23, for example, shows precise comparisons with the so-called Macedonian amphora dated in the 2nd century BCE, still produced until the 1st century BCE in Thessaly and in central Greece,⁶¹ or parallels with the amphora, form 2, from the Athenian Agora, possibly a type of container for liquid export of some kind (honey or vinegar).⁶²

It may be noted that both the so-called Mesopotamian amphoras very common in the Seleucid and Parthian levels of Failaka,⁶³ Nippur,⁶⁴ Uruk⁶⁵ and some typical forms of the late Parthian period dated to 1st-225 CE, such as bell-shaped jugs⁶⁶ and biconical amphoras and jugs,⁶⁷ are absent from the pottery repertoire of Kal-e Chendar.

Comparisons for no. 21:

Bard-e Neshandeh: upper terrace, phase I, ca. 3rd century-150 BCE (Ghirshman 1976, pl. 5: GBN 49).
Majid-e Sulayman: ca. 3rd century-150 BCE (Ghirshman 1976, pl. 50: MIS 567).

Comparisons for no. 22:

Larsa: E-Babbar, court VII, 2nd century BCE (Lecomte 1987, pl. 5: 3; pl. 8: 1); Hellenistic house 1, room 2, 2nd century BCE (Lecomte 1989, pl. 6: 3).

⁵⁸ Lecomte 1983, pl. XVIII, 52.

⁵⁹ Finkbeiner 1993, fig. 6: 665, 668.

⁶⁰ Hannestad 1983, 36; Gachet, Salles 1993, 70; Valtz 1984, 43; Haerinck 1983, 33.

⁶¹ Drougou, Touratsoglou 2013, 52, abb. 9-10.

⁶² Rotroff 2006, 86-87 cfr. fig. 19: 116-117, pl. 18.

⁶³ Hannestad 1983, pl. 27.

⁶⁴ McCown et al. 1978, pl. 54: 2.

⁶⁵ Duda 1979, taf. 59, 104.

⁶⁶ Haerinck 1983, 51, fig. 8: 8.

⁶⁷ Haerinck 1983, 52-54, fig 7: 8-11.



Figure 7.15 - a) Glazed amphora no. 21; b) detail of rim

Comparisons for no. 23:

Larsa: E-Babbar, room 17, end of 2nd century BCE-beginning of 1st century BCE (Lecomte 1983, pl. XVIII: 53); Hellenistic house 1, room 2, 2nd century BCE (Lecomte 1989, pl. 6: 2).

Uruk: U 18 e1 area, level IV-surface (Finkbeiner 1992, 540: 644); Parthian Villa,⁶⁸ 50 BCE-50 CE (Finkbeiner 1992, 542: 664-665).

Pilgrim flask (Fig. 7.30: 24)

The large, glazed pilgrim flask no. 24 (Fig. 7.16) found in T23 has an asymmetrical body that is round in frontal view but ovoid in side view. The two convex faces of the pilgrim flask were wheel-made and a plain clay band carefully joins together their sides.⁶⁹ The reservoir was then pierced, and a tall, cylindrical neck with a ridge below the rim was added to it. The strap handles are attached, from shoulder to neck below the ridge. The base is slightly convex. The two faces are decorated with incised concentric circles.

Although the terminology is medieval, the shape itself goes back to the late Bronze Age in the Aegean and Syro-Palestinian regions, where it is a common grave gift, and is probably a terracotta imitation of some sort of leather water bag. A flask form with a round body (with ovoid cross-section) decorated with painted geometric motifs or concentric circles, is particularly common in levantine production⁷⁰ during Iron Age II.

The earliest date for the introduction of pilgrim flasks in Iran could probably be about 600 BCE. By late Achaemenian time the type was well established. The round-shouldered pilgrim flask was still in use in the 1st century BCE but was finally replaced during the 1st century CE by the square-shouldered type, that had appeared at about 140 BCE⁷¹ at Seleucia and at Majid-e Sulayman⁷² and a little later at Susa in level 5c of Apadana Eat.⁷³ Almost simultaneously, the strap handles from neck to shoulder of the round-body type evolved into loop handles positioned on the shoulder.

⁶⁸ Hoh 1979, 32.

⁶⁹ This technique of manufacture was employed in different part of the Mediterranean area and the Near East. See e.g. Athens (Rotroff 1997, 185) and Susa (Boucharlat, Labrousse 1979, 77).

⁷⁰ Rotroff 1997, 183; Benson 1983.

⁷¹ Debevoise 1934, 9; Ghirshman 1976, 86.

⁷² Stronach 1978, 261, footnotes 1-8.

⁷³ Boucharlat 1987, 200.

The large pilgrim flask from Kal-e Chendar finds a good parallel⁷⁴ in a vessel from the 5c level of Apadana Est. Level 5c may be dated between the second half of the 1st century BCE and the end of the 1st century CE corresponding, although not exactly, to the middle phase of Haerinck's chronological phases.⁷⁵ Actually, the type first appeared in level 5f of the Apadana in which fragments of rim and neck identical to that on the flask of Kal-e Chendar have been found. Also in Failaka the French excavations of the 1980s confirm the presence of the pilgrim flasks in all the excavated levels.⁷⁶ The most common pilgrim flask has a symmetrical or asymmetrical globular body. Pilgrim flasks continued to be made in the East,⁷⁷ where the form was also produced in a large size, suitable for use as a donkey pannier.⁷⁸

As the amphoriskoi, the numerous small pilgrim flasks occurring on both terraces of Bard-e Neshandeh and Majid-e Sulayman have been considered as offerings themselves⁷⁹ or interpreted as objects for cult use.⁸⁰

Comparisons for no. 24:

Susa: Palace of Artaxerxes, level 3, 3rd century-first half 2nd century BCE (Boucharlat, Labrousse 1979, fig. 35: 3); Apadana Est, level 5f, end 5th century-end 4th century BCE (Boucharlat 1987, fig. 56: 1); Apadana Est, level 5c, second half 1st century BCE-first half 1st century CE (Boucharlat 1987, fig. 65: 8).

Seleucia: level III, 141 BCE-43 CE (Debevoise 1934, 103: 304).

Small pots with large mouth (Fig. 7.31: 25-28)

These miscellaneous vessels have been placed together on the basis of functional criteria.



Figure 7.16 - a) Glazed flask no. 24, front view; b) lateral view

⁷⁴ The flask from Susa is 36.6 cm in height. The rim is very similar to the flask from Kal-e Chendar but the handles are on shoulders (Boucharlat 1987, fig. 65).

⁷⁵ 'Cependant les correspondances ne sont pas parfaites ...' Indeed, some shapes from level 5c are dated by Haerinck to the late Parthian phase. But most of the shapes characteristic of the late Parthian period, actually, are not present in level 5c and appear in the following 5b-5a levels (Boucharlat 1987, 200).

⁷⁶ French excavations have established a more precise chronology of the levels of the Hellenistic Fortress: from the beginning of the 3rd century BCE to the 1st century CE (Gachet, Salles 1993, 64).

⁷⁷ Hannestad 1983, 40-42.

⁷⁸ Rotroff 1997, 185.

⁷⁹ Ghirshman 1976, 15, 87; Haerinck 1983, 14, 28, 36.

⁸⁰ Haerinck 1983, 33; Boucharlat 1987, 212.

The group includes unique pieces of small dimensions and capacity with height ranging from 6.5 and 8.3 cm and about 4-5 cm in diameter.

The pots are characterized by squat body and two handles (loop handles in nos 25-26, strap handles in no. 27) (Fig. 7.17; Fig. 7.18; Fig. 7.19) or a single handle, round in section, in no. 28. These small vessels differ from the amphoriskoi because, having a wide mouth, were no suitable for use as containers of perfumed oils or medicines.

No. 26 is a very small version of the so-called Mesopotamian amphora.⁸¹ Probably developed from a Neo-Babylonian shape,⁸² the amphora is characterized by rounded or squat body, loop handles on the shoulder and rim with one or two ridges below. The type is attested at least from the early Parthian period and particularly diffused in Glazed Ware in the pottery assemblage of Uruk, while in Seleucia a larger version (20-25 cm) is more common.

The production of these small pots during the Seleucid and Parthian periods illustrates the continuation of an older ceramic tradition, even if the glazed examples increase greatly, and the pots assume a funerary significance often serving as votive offerings and grave gifts,⁸³ as attested also by the funerary contexts (T23, T28 and Gr2) in which the Kal-e Chendar vessels were found.

Comparisons for no. 25:

Susa: Artaxerxes Palace, level 3, 3rd century-first half 2nd century BCE (Boucharlat, Labrousse 1979, fig. 35: 1).

Comparisons for no. 26:

Majid-e Sulayman: ca. 3rd century-150 BCE (Ghirshman 1976, pl. 53: GMIS554).

Larsa: E-Babbar, court VII, 2nd century BCE (Lecomte 1987, pl. 13: 5).

Seleucia: level III, early Parthian (Debevoise 1934, 99: 283).

Uruk: Bīt Akītu, 50 BCE-50 CE (Finkbeiner 1991, 555: 53); Irigal, early Parthian (Finkbeiner 1991, 601: 156).

The small jug no. 28 (Fig. 7.20) with squat body, handle from rim to shoulder and a tubular spout at 90 degrees to handle for right-handed pouring, deserves separate discussion. The jug has been found in Grave 2, an infant burial, with a glass balsamarium (no. 49/SO79). The small container finds a precise comparison with a glazed feeding bottle from the Parthian cemetery of Kangavar.⁸⁴ The dating of the cemetery is debated: Haerinck proposed a date in the 2nd-1st century BCE⁸⁵ but it is possible that the cemetery was still in use until the 1st century CE.⁸⁶ A similar painted feeding bottle came from Nahavand, where in 2005 and 2011 new excavations took place. The jug was published as an example of pottery of Seleucid and Parthian date but without any discussion.

The Kal-e Chendar type find comparison with the so-called filter jugs from the Athenian Agora with which it shares the pear-shaped form, the tubular spout, and the tall neck but not the strainer at the neck. The function of these small vessels is debated, and various interpretations have been offered.⁸⁷ It was thought they were used as a container for olive oil or perfumes or to ill oil lamps or as feeding bottles.⁸⁸ The discovery of milk traces inside some bottles means that at least some of them were used to replace breast-feeding but the presence of this type of vessels mainly as a gift for the graves of children may indicate that it was made especially for this purpose.⁸⁹ However, feeders have not been reserved exclusively for children and their deposit in the graves of adults raises questions about the

⁸¹ Hannestad 1983, 36-37.

⁸² Hannestad 1983, 37; Petrie 2002, 103.

⁸³ See the presence of these small pots in the Parthian graves of Uruk (e.g. Boehmer et al. 1995, Grab 550, a; Grab 560, b; Grab 575, g).

⁸⁴ Haerinck 1983, 108.

⁸⁵ Haerinck 1983, 89.

⁸⁶ Callieri 1995.

⁸⁷ See recently: Pomadere 2007; Dubois 2012; de Larminat 2012; Jaeggi et al. 2015; Centlivres Challet 2016.

⁸⁸ Sparkes, Talcott 1970, 161; Rotroff 1997, 181.

⁸⁹ Sparkes, Talcott 1970, 161.



Figure 7.17 - Glazed small pot
no. 25



Figure 7.18 - Glazed small pot
no. 26



Figure 7.19 - Glazed small pot
no. 27

use of these small vessels also as a means for administering a medicine or nourishing invalids.⁹⁰ Their frequent presence in graves, much less frequent in domestic contexts, on the other hand seems to suggest a specific function during the funerary rituals.

Comparisons for no. 28:

Kangavar: Parthian cemetery (Haerinck 1983, fig. 17: 5).

Nahavand: soundings 2005- 2011, Parthian period (Rahbar et al. 2014, pl. 8: top).

Athens: Athenian Agora, second half 2nd century BCE (Rotroff 1997, fig. 73: 1186-1187, filter jugs; fig. 73: 1194-1195, feeders).

Amporiskoi (Fig. 7.31: 29-34)

The amphoriskos covered with a brilliant turquoise glaze and used as container for precious oils is an original creation of a new form produced in great quantity by the local workshops in Mesopotamia and Elymais. The form, totally unknown in the Near East, was probably introduced during the final phase of the Selucid era and was so successful to become one of the most characteristic forms of the Parthian and Sasanian ceramic repertoire,⁹¹ as the late examples from Dura Europos and Seleucia testify.



Figure 7.20 - Glazed small jug no. 28

The examples from Kal-e Chendar were all found in T23. They have a pear-shaped body, disk base, a long, thin flaring neck and loop handle from neck to upper shoulder (Fig. 7.21). The rim is everted, triangular or rectangular in section with grooved lip (no. 34). The height ranges from 8 to 10 cm and rim diameter is about 3.5 cm.

No. 34, slightly warped during firing, was decorated with a series of incised grooves on body and two moldings at junction of body and base.

The origin of the Mesopotamian amphoriskos can probably be traced back to various Greek containers for perfumed oil, such as the small lékytos, the aryballos or the guttus.⁹² The production continued in Mesopotamia and central-southern Iran over a long period

⁹⁰ Rotroff 1997, 181.

⁹¹ Hannestad 1983, 40; for the Sasanian examples see e.g. Venco Ricciardi 1967.

⁹² Haerinck 1983, 33-34; Valtz 2000.

of time with little change, therefore its precise dating is often problematic.⁹³ The general trend of development⁹⁴ was toward pear-shaped smaller vessels rather than globular body forms and strap handles were preferred to loop handles. The neck became narrower and the wall thicker so that the vessels had, over time, a diminished capacity.⁹⁵

The amphoriskoi found on the two cult terraces of Bard-e Neshandeh and Majid-e Sulayman, the most important sanctuaries of Hellenistic and Parthian Elymais so far excavated, reveal close similarities with the vessels coming from our excavation, but they have been interpreted as offerings or cult paraphernalia.⁹⁶ Indeed, in Kal-e Chendar, as in Suse⁹⁷ and Choga Mish,⁹⁸ the amphoriskoi are attested mainly in funerary contexts than in sacred areas and they would not seem related with the religious function of the structures unearthed.

Comparisons for nos 29-33:

Bard-e Neshandeh: upper terrace, phase I, ca. 3rd century-150 BCE (Ghirshman 1976, pl. 4: GBN50).

Choga Mish: Parthian level (Delougaz, Kantor 1996, pl. 70: C).

Majid-e Sulayman: 'Grand Temple', NW corridor, ca. 3rd century-150 BCE (Ghrishman 1976, pl. 39: GMIS215, GMIS336).

Susa: Apadana Est, level 5c, second half 1st century BCE-first half 1st century CE (Boucharlat 1987, fig. 65: 4-5); Artaxerxes Palace, level 3, 3rd century-first half 2nd century BCE (Boucharlat, Labrousse 1979, fig. 35: 2).

Dura Europos: 2nd- first half 3rd century CE (Toll 1943, fig. 23).

Seleucia: levels II-I, about 43-200 CE (Debevoise 1934, nos 293-295); Parthian levels (Valtz 2000, fig. 2).

Uruk: Irigal, second half of 2nd-1st century BCE (Finkbeiner 1991, 606: 198); survey 1982-1984 (Petrie 2002, fig. 8: 29a).

Failaka: Hellenistic Fortress, half 3rd century-beginning 1st century BCE (Hannestad 1983, pl. 29: 302).



Figure 7.21 - Glazed amphoriskoi nos 29-30

⁹³ The small bottles seem to have been in use at Failaka throughout the existence of the settlement (Hannestad 1983, 38).

⁹⁴ Hannestad 1983, 40. Oates suggests that the shape is typical of southern Mesopotamia while the globular one is more attested in the north (Oates 1968, 125).

⁹⁵ Haerinck 1983, 34.

⁹⁶ Ghirshman 1976, 15, 87; Haerinck 1983, 14, 28, 36; Boucharlat 1987, 212.

⁹⁷ Boucharlat 1987, 212, note 159.

⁹⁸ Delougaz, Kantor 1996, 9.

Miscellaneous Shapes (Fig. 7.32: 35-37)

Some sherds don't belong to the types now described and represent single instances. No. 35 is a cylindrical beaker with thickened rim and upper wall decorated with a plain ribbing at top of the wall. A second ribbing is decorated with impressed lunate elements alternated with circles and under it a series of incised parallel lines are still visible. The beaker finds parallels in a similar form in BI-ware⁹⁹ from Failaka decorated by a series of grooves on the body and in similar vessels from Babylon, Uruk and Larsa in Glazed and Common Ware. The type has a long history in Mesopotamia reaching back to the Isin-Larsa period.¹⁰⁰

Comparisons for no. 35:

Babylon: Shu-Anna, early Parthian period (Cellerino 2004, fig. 14: 99-100).

Larsa: E-Babbar, room 17, 2nd century BCE (Lecomte 1983 pl. VII: 31).

Uruk: U 18 e1 area, level III, 3rd century BCE (Finkbeiner 1992, 551: 753-754).

Failaka: Hellenistic Fortress, 1st century BCE-1st century CE (Hannestad 1983, pl.17: 187).

A wide-mouthed bin no. 37 decorated by parallel ridges was probably a large storage vessel covered also on the interior by a yellowish-white glaze.

A fragment of rim no. 36 decorated by two rows of pellets found in T24 is an example in Glazed Ware of a similar type in Common Ware (no. 95) that Haerinck dates in the late Parthian period.¹⁰¹

Comparisons for no. 36:

Susa: A VI/19-1-51, n° S, X, 1st century CE-about 225 CE (Haerinck 1983, fig. 8: 7; pl. V: 6).

7.3 Red Slip Ware

The red slip of Kal-e Chendar pottery is a thin layer of fine clay that has not completely reached the sintering point.¹⁰² The intensity of the colour depends on the presence of iron oxides and it is also influenced by the oxidizing atmosphere of the kiln. As a result, there are considerable variations in colour from dark orange to brownish red. The slip was originally matte and of variable thickness (from 20-30 to 600 microns)¹⁰³ even on the surface of the same vessel. Applied by dipping, the slip is often (38.46% of cases) burnishing with pressure in narrow strokes by a tool. This treatment, leaving characteristic vertical marks on the walls, sealed the porous surface creating a glossy surface. The Red Slip pottery forms 23.01% of the fragments found (78 occurrences out of 339) and for the most part has a fine to medium fabric with mineral-organic inclusions (fine: 29; medium: 43; medium coarse: 1) or mineral inclusion (fine: 5).

The fabric has a pink (Munsell Colour 7.5YR 7/4 - 8/3 - 8/4) to reddish yellow colour (Munsell Colour 5YR 7/6 - 6/6) or, in a smaller number, a light red (Munsell Colour 2.5YR 6/6 - 6/8) or a very pale brown colour (Munsell Colour 10YR 7/4 - 8/3 - 8/4). The slip is often badly preserved and, in some cases, almost totally detached.

In Iran, Red Slip pottery is attested in Khuzestan, Fars and Kerman from the Late Achaemenid period to the first half of the 2nd century BCE.¹⁰⁴ This surface treatment makes its appearance in the Achaemenid period in Fars (Pasargadae and Tol-e Spid)¹⁰⁵ and ceases to be made in south-western,

⁹⁹ The BI ware is a type of pottery of the late settlement of the island. The class, characterized by new morphologies and a thick green glaze, is dated to the late 1st century BCE or first decades of the 1st century CE (Hannestad 1983, 14-15, 78; Gachet, Salles 1993, 70).

¹⁰⁰ Hannestad 1983, 27; Cellerino 2004, 110.

¹⁰¹ Haerinck 1983, 54, note 133, 73.

¹⁰² The term indicates a series of chemical-physical processes which take place during firing at sufficiently high temperatures (1050-1100°) in an oxidizing atmosphere. The coating consisting of a fine-grained clay mixture applied in a thin layer over the vessel undergoes a complete melting and sintering of all the components until the vitrification. Now, the slip is 'sealed' and shiny and has a very low porosity (Cuomo di Caprio 2007, 314-317). The firing temperature estimated at around 700-850° is not sufficient to allow a complete sintering process so the red slip on Kal-e Chendar pottery is vitrified only in some areas of the vessels (see chapter 8) perhaps as a result of the low temperature or the bad circulation of oxygen in the kiln.

¹⁰³ See chapter 8.

¹⁰⁴ Haerinck 1983, 20, 24, notes 45-47.

¹⁰⁵ Pasargade: Stronach 1978, 184; Nurabad: Huff 1975, 169, note 14; Tol-e Spid: Petrie et al. 2006, 131-132.

south and south-eastern Iran during the first half of the 2nd century BCE.¹⁰⁶ Haerinck suggested that it is typical of the ancient phase of the Parthian era (250-150 BCE) and pointed out that the same surface treatment has been already noted on a class of pottery produced in northern Mesopotamia during the Hellenistic period.¹⁰⁷ In northern Mesopotamia in Red Painted Ware are made types clearly inspired by the varnished pottery production of the Hellenistic levels of Tarsus and Antioch reproducing Attic models,¹⁰⁸ during the 3rd and the first half of 2nd century BCE.¹⁰⁹ The red paint is usually a simple band on the top of the wall (both inside and outside) of open forms and only occasionally the paint covers the whole body. The colours varied from reddish to reddish-black and are often unevenly painted. The spatial distribution of this class, present not only at Nimrud but also in the pottery collected in more recent surveys and excavations,¹¹⁰ indicates that Red Paint Ware should be considered a north-Mesopotamian decorative technique rather than as an imitation of Western models.

At Susa the Red Slip Ware is represented by a small number of fragments found in level 5f of the Apadana Est dated in the beginning of the 3rd century BCE.¹¹¹ A single fragment, probably intrusive or residual, belonging to an open form has been found in level 3A of the Ville Royale II, dated in the 1st century CE.¹¹² Two class of Red Slip pottery are more common in levels II and III of the Village Perse-Achéménide excavated by Ghirshman and published in 1954.¹¹³ A type is characterized by a red fabric and polished red surface and belongs to a class of pottery produced in the early Achaemenid period already found in the Bakhtiari mountains and in the Pish-e Kuh region.¹¹⁴ A second type has a yellowish fabric and is covered by a red slip. This ware is probably the same found at Kal-e Chendar. It is noteworthy however that none of the forms published by Ghirshman have any comparison with the pottery from Kal-e Chendar.

Pottery covered by a red slip sometimes polished is also present in the Achaemenid levels of Choga Mish but has not been found in the Parthian level dated in the final phase of the period.¹¹⁵

During the Seleucid and Parthian ages, the Fars pottery differs very slightly from that of the previous Achaemenid period and reflects local traditions, so that the production of Red Slip pottery continues, while only few painted and glazed pottery appears.¹¹⁶ In the Achaemenid phases of Toll-e Nurabad (phases B5a and B4) a certain number of fragments characterized by an internal and external orange-red slip, sometimes burnished, were found. This class continues to be produced, albeit in smaller quantities, in the subsequent phase B3 which represents a transitional phase to the post-Achaemenid period (namely Parthian)¹¹⁷ and in phase B2 in which new forms appear and the presence of fragment of glazed sherds are reported.¹¹⁸ Phases 12-1 of the nearby Toll-e Spid site also belong to the same ceramic horizon.

A local Red Burnished Ware is also produced at Seleucia and is considered an imitation of the ESA (Eastern Sigillata A)¹¹⁹ that is imported in Seleucia probably from the 150 BCE. Therefore, in red, burnished ware two of the most typical Hellenistic forms, namely dish with incurving rim and the bulbous unguentarium,¹²⁰ are produced from the second half of the 2nd century BCE.

¹⁰⁶ Haerinck 1983, 234-235.

¹⁰⁷ Oates 1968, 123-124.

¹⁰⁸ Oates 1968, 123.

¹⁰⁹ Oates 1968, 122.

¹¹⁰ See the bibliography in Gavagnin et al. 2016.

¹¹¹ Boucharlat 1987, 189, 194.

¹¹² de Miroschedji 1987, 46-47.

¹¹³ The chronology defined by Ghirshman is controversial. The parallel between level I of the Village Perse-Achéménide (pre-Achaemenid) and layers 7-6 (Neo-Elamite II) of the Ville Royale II proposed by de Miroschedji, is generally accepted. Levels II and III are dated to the final phase of the Achaemenid period and part of the material is probably even more recent. If so, we must assume a hiatus between levels I and II. See, for this discussion, Boucharlat 2005, 243.

¹¹⁴ See e.g. Zagarell 1982, 41-46.

¹¹⁵ Delougaz, Kantor 1996, 9-10.

¹¹⁶ Potts et al. 2006, 12.

¹¹⁷ Weeks et al. 2006, 73.

¹¹⁸ Weeks et al. 2006, 60-62.

¹¹⁹ Hayes 1985.

¹²⁰ Valtz 1993, 174-176.

The potsherds from Kal-e Chendar find few comparisons with pottery from the Izeh plain found during the survey conducted in 1976 by the ICAR and the University of Michigan and edited by Wright. Regrettably, the pottery of the Seleucid and Parthian periods from the area is only partially published, and roughly dated, by Eqbal,¹²¹ despite the fact that sites appear to have increased in number and size from the Achaemenid to the Sasanian period.¹²² However, during the survey, Red Slip pottery (and glazed pottery, as well) was found abundantly and was considered a characteristic Seleuco-Parthian local ware.¹²³ Most of the Red Slip pottery figures as funerary gifts in T23 and T20, but a number of sherds were collected in excavated strata, particularly in Trenches 1 and 10.

7.3.1 Open forms

Rims and complete or almost complete open vessels form 33.33% of the diagnostic Red Slip Ware pottery. As already pointed out, many single instances are attested, and a typological division is almost impossible.

Plates (Fig. 7.33: 47-48)

Plates nos 47-48 belong probably to the fishplate type for the typical thickened rim triangular in section.

The fishplate¹²⁴ is one of the most widespread forms in the Hellenistic world and in Mesopotamia and Iran represents a case of adoption by local potters of a genuine Greek form. In the Near East the fishplate was produced from the first half of 3rd century BCE, for the most part in Glazed Ware, but, although more rarely, also in Common Ware or in various local wares. Examples of the local production and adaptation of this western type are the red painted plates found at Nimrud and northern Mesopotamia that Oates considers a Mesopotamian version of the black glazed fishplate produced in the western Hellenistic world.¹²⁵ At Nimrud the red painted fishplates are a common shape in levels 3-5. In levels 1-2, dated to the 2nd century BCE, they are usually produced in Common Ware. An example covered with a red slip has been found, unstratified, at Pasargadae.¹²⁶

Comparisons for nos 47-48:

Pasargadae: Tall-e Takht, unstratified (Stronach 1978, fig. 108: 16).

Nimrud: levels 5-3, about 215-150 BCE (Oates 1968, fig.15: 3-4); levels 2-1, about 145-after 140 BCE (Oates 1968, fig. 16: 69).

Plain hemispherical bowls (Fig. 7.33: 49-51)

Plain hemispherical bowls (nos 49-51) are very simple and barely diagnostic. They are hemispherical in shape and have a rounded rim ranging from 11 to 17 cm in diameter. The bowls are characterized by a medium-fine ware and thin walls. In south-western Iran these bowls are a long-lasting type, as comparisons with similar materials found for the most at Susa seem to demonstrate.¹²⁷ These bowls are then produced at least from the Achaemenid to the late Parthian period, when they could be glazed or in Eggshell Ware as attested by examples found at Susa and Choga Mish.¹²⁸

Comparison for no. 51:

Choga Mish: Parthian level (Delougaz, Kantor 1996, pl. 70: L).

¹²¹ Eqbal 1979, 114-123, figs 44-46.

¹²² Eqbal 1979, 116; Wright 1979, 127.

¹²³ It is noteworthy the lack of these wares at Hung-e Azdhar (Cellerino 2015, 124,168-169).

¹²⁴ See above.

¹²⁵ Oates 1968, 123.

¹²⁶ Stronach 1978, 247.

¹²⁷ See for comparisons: Cellerino 2015, 125-126.

¹²⁸ Delougaz, Kantor 1996, 9-10.

Carinated bowls with flaring rim (Fig. 7.33: 52-53)

No. 52 (Fig. 7.22) is an example in Red Slip Ware of a carinated deep bowl with flaring rim (16.5 cm in diameter). Carinated bowls with flaring rims are a typical shape of the Achaemenid period, spread over the vast regions of the empire, having been made of metal, pottery, and glass,¹²⁹ which were produced until the Parthian period. The bowl found in T23 belongs to the sub-type described by Stronach as deep bowls sharply or curvily carinated with flaring upper wall and rim, and rounded base, sometimes with omphalos;¹³⁰ the second sub-type, the so-called ‘cream bowl’¹³¹ or ‘phialae mesomphalos’, is larger in diameter, shallower, and more sharply carinated, with omphalos base. Both sub-types have antecedents dated to the 1st millennium BCE (in the Neo-Assyrian or Iron Age III periods)¹³² all over spread in the Near East,¹³³ even manufactured in precious metals as luxury goods, and their production continued in Asia down to the Hellenistic and Parthian periods. In the Parthian period the bowls were produced, even if with some variations, in local ware, as our Red Slip Ware or Festoon¹³⁴ and Triangle Wares, with a higher occurrence in western Iran¹³⁵ during the 1st century BCE,¹³⁶ while in Common Ware the bowls are made even in Mesopotamia to Central Asia. In the lowlands and highlands of south-west Iran the type is attested at the very beginning of the Parthian period but, according to Haerinck,¹³⁷ the shape did not survive beyond the first half of the 2nd century BCE. At Persepolis and Pasargadae these bowls are dated by Stronach to the late or post-Achaemenid period (4th century BC or 280-180 BC).¹³⁸

Comparisons for no. 52:

Bard-e Neshandeh: early Parthian,¹³⁹ ca. 3rd century-150 BCE (Haerinck 1983, fig. 1: 5); upper terrace, phase I (Ghirshman 1976, pl. 5: GBN46).

Choga Mish: late Iron Age to Achaemenid period (Alizadeh 2008, fig. 24: M).

Hung-e Azhdar: 1 area, Tr. 1-3, Achaemenid to Parthian period (Cellerino 2015, fig. 2: 18-23).

Susa: Ville Royale II, level 5B, 4th century BCE (de Miroschedji 1987, fig. 7: 14).

Pasargadae: Tall-e Takht, Achaemenid period (Stronach 1978, fig. 106:12-13).

Ram Hormuz area: Achaemenid period (Alizadeh 2014, pl. 159: B).

Tol-e Spid: phase 12, Achaemenid period (Petrie et al. 2006, fig. 4.95: TS439).

The bowl no. 53 is another version of the carinated bowls with flaring rim. The upper wall is slightly concave and decorated by three ridges, the lower wall is convex and the carination is rounded. Probably the base, now missing, was rounded or a low disk foot. At Susa the type appears in the level 5A of the Ville Royale II, dated to the late Achaemenid period, and was produced, without changes, in the course of the Seleucid period¹⁴⁰ both in Glazed and Common Ware. The closest parallel is provided by a yellow glazed bowl from level 3 of the Palace of Artaxerxes near the Shahur river dated to the 3rd-first half of the 2nd century BCE.¹⁴¹ In the same span of time de Miroschedji placed the glazed bowls of this type collected during the survey in the Khuzestan plain.¹⁴² The horizontally fluted rim was very popular also in Failaka where the bowls, occurring in lower and upper levels, are considered an age-old Mesopotamian shape.¹⁴³ But the examples of Failaka, belonging to Hannestad’s Variant 3,

¹²⁹ For an outlook on the Achaemenid bowls see Dusinberre 1999, 76-78 and notes, 101-102; Dusinberre 2003, 172-196 and notes.

¹³⁰ According to Dusinberre 1999, 77, these are the most typical Achaemenid bowls.

¹³¹ Stronach 1978, 184.

¹³² Haerinck 1983, 22.

¹³³ According to Adachi 1997, shallower bowls are more ancient for they can occur before the 10th century BCE, while deep bowls do not antedate the 8th century.

¹³⁴ Stronach 1974, 242-244, pl. LV: 8-9.

¹³⁵ Boucharlat, Haerinck 1991a; 1991b; Adachi 2005.

¹³⁶ Haerinck 1983, 246, maps 8, 247.

¹³⁷ Haerinck 1983, 22, 246-247, Carte 8.

¹³⁸ Stronach 1978, 183.

¹³⁹ As proposed by Haerinck 1983, 62, no. 5. The comparison between no. 52 and the example from Bard-e Neshandeh is interesting because its yellowish fabric could be the same of the bowl from Kal-e Chendar.

¹⁴⁰ de Miroschedji 1987, 23.

¹⁴¹ Boucharlat, Labrousse 1979, 78.

¹⁴² de Miroschedji 1981, 171.

¹⁴³ Hannestad 1983, 25.



Figure 7.22 - Red Slip carinated bowl with flaring rim no. 52

have a more pronounced carination and straight wall.¹⁴⁴ According to Haerinck the type disappears soon after the early Parthian phase, no later than 150 BCE.¹⁴⁵

Comparisons for no. 53:

Khuzestan plain: KS-15, Seleucid period (de Miroschedji 1981, fig. 59: 2).

Susa: Palace of Artaxerses, level 3, 3rd century-first half 2nd century BCE (Boucharlat, Labrousse 1979, fig. 34: 14); Ville Royale II, level 3E/D, 3rd century BCE (de Miroschedji 1987, fig. 19: 11).

Pasargadae: Tall-e Takht, post-Achaemenid period (Stronach 1978, fig. 107: 20).

Failaka: Hellenistic Fortress, half 3rd century-beginning 1st century BCE (Hannestad 1983, pl. 12: 138-139; pl. 13: 167).

Large bowls (Fig. 7.33: 54-56)

No. 54 is a ledge rim of a deep bowl, 23 cm in diameter, barely diagnostic.

Large deep bowls are represented by nos 55-56, found in Trench 1. They have a thickened rim (no. 56) or an inwardly inclined rim (no. 55) and, just below the rim, a series of impressions made by stick. Just below the rim of no. 56 there is a partially preserved horizontal handle pressed on the wall or more probably a applied decoration consisting in a clay rope. The shape finds parallels with a group of large glazed bowls from the Fortress of Failaka in BI-ware decorated by a clay rope arranged in an arch, a type of decoration that appear in Seleucia not earlier than 1st century CE,¹⁴⁶ but can be compared also with a bowl from Choga Mish with a loop handle.

Comparisons for nos 55-56:

Choga Mish: Parthian level (Delougaz, Kantor 1996, pl. 71: B).

Failaka: Hellenistic Fortress, 1st century BCE-1st century CE (Hannestad 1983, pl. 15: 177-181).

7.3.2 Closed forms

Closed forms are apparently more common than open forms, being 66.66% of the diagnostic Red Slip Ware sherds and vessels found. For the most part they are funerary gifts discovered in T23 and T20. The complete or almost complete vessels of small or medium size are jugs, an amphora, a jar and a miniature pot. Some variants of necked jars and pots can be described only on the basis of their rims. This said, it must be also stressed that the same type of rim could have belonged to different vessel types, although a number of rims found comparisons with the rim of complete vessels.

¹⁴⁴ Hannestad 1983, pl.12.

¹⁴⁵ Haerinck 1983, 32.

¹⁴⁶ Hannestad 1983, 26-27.

Jugs, amphora and jars (Fig. 7.34: 57-64; Fig. 7.35: 66-69)

The jugs have ovoid body and a low flaring (no. 59) (Fig. 7.23) or cylindrical neck (no. 57), with simple rounded rim. No. 57 has a disk base and no. 59 a low ring base. The strap handles, slightly concave on outer face, are positioned from shoulder to rim. The slip has been applied to the exterior surface including the underside but only to the interior surface of the neck. Jug no. 59 has a decorative groove (as rims nos 60-61) below the rim. The shape has some parallels with a type of jug, later in date, produced in Common Ware and characterized by a rough corrugated surface on the exterior typical of the 1st century CE onwards.¹⁴⁷ The rims nos 60-63, which do not show any handle, are barely diagnostic and are produced from the Iron Age down to the Parthian period.¹⁴⁸

The small amphora no. 64 (Fig. 7.24) has slightly globular body, a tall neck with simple rounded rim and a flat base. The handles, from shoulder to rim, are round in section.

The incomplete jar no. 69, neck and rim are missing, has a globular body decorated by a series of concentric grooves and a disk base. No handle attachments are present. Rim no. 66, an example of thickened rim triangular in section (as nos 67-68), could belong to this jar. The jar is roughly comparable to a vessel from the area U18 e1 in Uruk dated from the late Neo-Babylonian to the Parthian period.¹⁴⁹

Comparisons for no. 57:

Choga Mish: Parthian level (Delougaz, Kantor 1996, pl. 71: I; Alizadeh 2008, fig. 19: I).

Susa: Artaxerxes Palace, level 3, 3rd century-first half 2nd century BCE (Boucharlat, Labrousse 1979, fig. 31:7).

Farsan district: Parthian period (Khosrowzadeh 2010, fig 8: 6-7).

Pasargadae: Tall-e Takht, Achaemenid to post-Achaemenid period (Stronach 1978, fig. 113: 6).

Tol-e Nurabad: phase B5b, Achaemenid period (Weeks et al. 2006, fig. 3.130, TNP2265).

Tol-e Spid: phase 10, Achaemenid-post Achaemenid period (Petrie et al. 2006, fig. 4.104: TS370); phase 7, late Achaemenid-post Achaemenid period (Petrie et al. 2006, fig. 4.108: TS185, TS167); phase 4, late Achaemenid-post Achaemenid period (Petrie et al. 2006, fig. 4.112: TS96/104).

Comparison for no. 59:

Bard-e Neshandeh: upper terrace, ca. 3rd century-150 BCE (Ghirshman 1976, pl. 12: GBN118).

Comparisons for no. 63:

Chogha Mish: Achaemenid level (Delougaz, Kantor 1996, pl. 75: A-C).

Ram Hormuz area: Parthian level (Alizadeh 2014, pl. 82: B).

Tol-e Spid: phase 12, Achaemenid period (Petrie et al. 2006, fig. 4.95: TS515).

Comparison for no. 69:

Uruk: U 18 e1/2 area, 50 BCE-50 CE (Finkbeiner 1992, 541: 651).

Miniature pot (Fig. 7.34: 65)

No. 65 (Fig. 7.25) is a neckless miniature pot (3.2 cm in rim diameter, 6.2 cm in height). It has a pear-shaped body, a rounded rim and a flat base. Found in T23 the pot was probably a container for unguents or medicine of a common type produced in Common and Glazed Ware during the Seleucid and Parthian periods.

Numerous comparisons may be found also among Neo-Babylonian and Achaemenid pottery (Ur, Isin, Tell al Laham).¹⁵⁰ The production of the Seleucid (Uruk, Larsa, Tell ed Der)¹⁵¹ and Parthian period (Seleucia, Uruk) maintains the same morphological characteristics substantially unchanged, although

¹⁴⁷ Haerincq 1983, fig. 7: 4-5; Boucharlat 1987, 200, fig. 67: 10; de Miroschedji 1987, fig. 27: 10; Alizadeh 2008, fig.19: I.

¹⁴⁸ In Uruk the type was produced from the Neo-Babylonian period to the Parthian age (Duda 1979, 67, no. 213); Cellierino 2015, 141-142.

¹⁴⁹ Duda 1979, 66, no. 207.

¹⁵⁰ Cellierino 2004, 150-151.

¹⁵¹ Cellierino 2004, 150-151.



Figure 7.23 - Red Slip jug no. 59



Figure 7.24 - Red Slip amphora no. 64

the number of glazed examples seems to increase. It is interesting to note that miniature pots are a remarkably common feature of grave goods of Seleucid and Parthian age burials.¹⁵²

Comparisons no. 65:

Babylon: Shu-Anna, Seleucid levels (Cellerino 2004, fig. 17: 116).

Seleucia: Parthian levels (Valtz 2000, fig. 1).

Uruk: Tomb 278 (Finkbeiner 1992, 553: 783); Tomb 323, U 18 e1 area, level III, 300-125 BCE (Finkbeiner 1992, 560: 846).

Pot (Fig. 7.35: 70)

The pot no.70 was found in Trench 1. It is a neckless vessel with a ledge rim and probably oval or globular body. No. 70 has a precise parallel with a pot in Common Ware coming from the surface in Area U/V 18 at Uruk.

Comparisons no.70:

Uruk: U/V18 area, surface (Finkbeiner 1992, 540: 649).

7.4 Common Ware

Common Ware forms 33.04% of the fragments found (112 occurrences out of 339). Most of Common Ware has a medium to medium-coarse fabric with mineral-organic inclusions (fine: 16; medium: 48; medium coarse: 23; coarse 15) or a medium fabric with only mineral inclusions (medium: 10 sherds).

The fabric and surfaces have a very pale brown (Munsell Colour 10YR 7/3 - 7/4 - 8/2 - 8/3 - 8/4) to pale brown (Munsell Colour 2.5Y 7/4 - 8/3 - 8/4) colour or in some case a pink (Munsell Colour 7.5YR 7/3 - 7/4) to yellowish red/reddish yellow colour (Munsell Colour 5YR 5/6 - 6/8) or red to reddish brown colour (Munsell Colour 2.5YR 5/8 - 5/3).

Surface treatments are rarely attested. In a limited number of cases (15.17%), a slip, applied over the vessel, gives to the exterior and interior surfaces a lighter colour than the core. Only 10 sherds (2.95%) have a smoothed surface, a treatment frequently applied to Red Slip pottery, which results in a series of vertical strokes produced by a tool.

¹⁵² Cellerino 2004, 111, note 174.

7.4.1 Open forms

Open forms represent 48.27% of the diagnostic rims in Common Ware. The identification of precise comparisons is often difficult especially when only an example is present in the common pottery assemblage or long-lasting production of some types, like hemispherical bowls with rounded rim, and it often led to the identification of parallels covering a wide timespan and giving worthless indication on the chronology.

Small to medium bowls (Fig. 7.36: 74-82)

Small to medium bowls are a heterogeneous group, measuring 14 to 20 cm in diameter.

Hemispherical bowls with rounded rim and convex walls (nos 74-75), coming from Trench 1 on the Upper Terrace, are a very simple and barely diagnostic forms as they are a long-lasting type, as comparisons with similar materials, found for the most at Susa, seem to demonstrate.¹⁵³ Indeed, the comparisons attest that these bowls are produced at least from the Achaemenid to the late-Parthian period, when they could be glazed as indicated by examples found at Susa and Choga Mish.¹⁵⁴

Comparisons for no. 74:

Choga Mish: Parthian level (Delougaz, Kantor 1996, pl. 70: G).

Larsa: E-Babbar, room 21, 2nd century BCE (Lecomte 1989, pl. 1: 5).

The conical bowl no. 76 is a unicum. It has a thickened rounded rim and is decorated by two parallel lines on the outer surface below the rim. Bowl no. 77 has a band thickened rim slightly triangular in section. A sample from post Achaemenid layers at Pasargadae, but not later than 280 BCE, is close to ours for the rim but not for the body's shape, which is hemispherical in this case.

Comparisons for no. 77:

Pasargadae: Tall-e Takht, late Achaemenid period (Stronach 1978, fig. 112: 2).

The hemispherical bowl no. 78 is a unicum. The simple rim has a flat lip. Below the rim there is a ridge with a series of oblique impressions.

The hemispherical bowl with a ledge rim no. 79 is a unicum.



Figure 7.25 - Red Slip miniature pot no. 65

¹⁵³ See the comparisons cited for the same types of rims and vessels found during the excavation in the nearby site of Hung-e Azhdar conducted by the Iranian-Italian Expedition (Cellerino 2015, 125-126, fig. 1 nos 1-5).

¹⁵⁴ Delougaz, Kantor 1996, 9-10; de Miroschedji 1978, 225-227, tab. 3; 1987, tab. 11; Boucharlat 1993, tab. 1 for the revised chronology.

Comparisons for no. 79:

Pasargadae: Tall-e Takht, unstratified (Stronach 1978, fig. 111: 18).

Larsa: E-Babbar, room 21, 2nd century BCE (Lecomte 1989, pl. 1: 5).

The bowls nos 81 and 82 are the deep version in Common Ware of the bowls with angular profile and outturned rim above described¹⁵⁵ and find parallels in particular with no. 14.¹⁵⁶ The type was usually produced in Glazed Ware as many of the form inspired by Western prototypes, as the bowls from level II of U 18 e1 area in Uruk, attributed to the Seleuco-Parthian period, from 125 to 50 BCE, show.¹⁵⁷

Large bowls (Fig. 7.36: 83-86)

Large bowls are a heterogeneous group, measuring about 22 cm in diameter. Large hemispherical bowls are deep and have a different types of rim: nos 83-84 have a ledge rim and no. 86 a thickened rim bent toward the inside. Bowl no. 85 is slightly carinated on the upper wall and has a rounded rim.

Comparison for no. 85:

Larsa: E-Babbar, room 17, 2nd century BCE (Lecomte 1989, pl. VI: 30).

Comparison for no. 86:

Pasargadae: Tall-e Takht, post-Achaemenid period (Stronach 1978, fig. 112: 11).

Comparisons for no. 87:

Choga Mish: Parthian level (Delougaz, Kantor 1996, pl. 70: H).

7.4.2 Closed forms

Little more than half of the rims in Common Ware belong to closed forms (51.72%). The stratigraphic context of the findings makes the chronology of these vessels problematic, even more than that of the open forms. Complete or almost complete vessels are lacking, but several varieties of necked jars or pots can be described only on the basis of their rim. This said, it must be also stressed that the same type of rim could have belonged to different forms of vessel. Closed forms are usually necked jars of small or medium size and few examples of one handled jars and amphoras are present. Pots having a low neck and neckless pots with, probably, ovoid, or globular body are quite frequent. As with the open forms, in most cases these are single occurrences, although the rims found comparisons with vessels produced in different ware (i.e. Glazed Ware, Red Slip Ware and Cooking Ware).

Small necked vessel (Fig. 7.37: 87)

Only a ledge rim belongs to a vessel of small size, no. 87, measuring 4 cm in diameter. The neck is very short and the body probably ovoid or pear-shaped as that of the smaller red slipped vessel no. 63 also found in T23.

Small to medium necked jars (Fig. 7.37: 88-95)

The majority of closed forms belongs to small to medium necked jars. These are a heterogeneous group, measuring 8 to 16 cm in diameter. Five types of rims can be identified:

- necked jars with direct rounded rim (nos 88-89), 13-14 cm in diameter. The neck is straight. In some cases, the vessel can be completed by a handle, round in section. Necked jars with rounded rim were produced for centuries and are barely diagnostic being dated from the Early Iron Age to the Parthian period. However, the types with one or two handles are characteristic of more limited

¹⁵⁵ See above.

¹⁵⁶ See above the comparisons cited for bowl no. 14.

¹⁵⁷ Finkbeiner 1993, 7, tab. 2.

periods spanning from the late Achaemenid to the Parthian age¹⁵⁸ and at Kal-e Chendar they are also attested in Red Slip Ware.

Comparison for nos 88-89:

Hung-e Azhdar: 1 area, Tr. 1-2, Iron Age-Parthian period (Cellerino 2015, fig. 5: 52-57).

Uruk: J 18 e1 area, 125-50 BCE (Finkbeiner 1991, 621: 225).

- no. 94 is a necked jar with a ledge rim measuring 16 cm in diameter. Straight neck. Smaller ledge rims are typical of some glazed amphoras (nos 21-22) found at Kal-e Chendar in T23 and T9.

- necked jars with thickened rim and flat lip (nos 90-91). The vessel can be completed by two handles.

- band rim jars with thickened rim, triangular in section (nos 92-93), measuring 8 to 12 cm in diameter. The neck can be straight or everted.

Comparisons for no. 92:

Pasargadae: Tall-e Takht, late-post Achaemenid period (Stronach 1978, fig. 118: 11).

Uruk: V 18 a1 area, level I, 50 BCE-50 CE (Finkbeiner 1993, 570: 947).

Comparisons for no. 93:

Pasargadae: Tall-e Takht, Achaemenid-post Achaemenid period (Stronach 1978, fig. 117: 9, 13-14, 20-21).

Larsa: E-Babbar, room 24, 2nd century BCE (Lecomte 1987, pl. 21: 5; pl. 31: 5).

Comparisons for n. 94:

Larsa: E-Babbar, room 17, end of 2nd century-beginning of 1st century BCE (Lecomte 1983, pl. XV: 33, 36).

- necked jar coming from the surface, no. 95, has the rim decorated by a series of pellets between a molding, with oblique impressed marks, and incised wavy lines. This rim finds a comparison with a similar glazed example found in T24 (no. 36). These types of decoration applied to the rim are considered by Haerinck as typical of the final phase of the Parthian period.¹⁵⁹

Comparisons for no. 95:

Susa: A VI/19-1-51, n° S, X, 1st century-about 225 CE (Haerinck 1983, fig. 8: 7; pl. V: 6).

Pots (Fig. 7.37: 96-100)

The pots have very low neck or are neckless, with rounded, thickened or ledge rim and oval or globular body. They occur quite frequently forming 33.33% of closed forms. The type could be produced in medium to big size. At Susa, similar vessels with oval body and rounded base are dated to the end of the Neo-Elamite period¹⁶⁰ to the Parthian and Sasanian periods. During the Seleucid and Parthian ages, pots are usually produced in Glazed Ware. The glaze covers also the interior of the vessel¹⁶¹ which became impermeable. At Kal-e Chendar the form is attested also in Red Slip Ware and could be equipped with handles.

Comparisons for no. 96:

Choga Mish: Parthian level (Delougaz, Kantor 1996, pl. 72: K).

Hung-e Azhdar: 1 area, Tr. 1, 3, Neo-Elamite to Parthian period (Cellerino 2015, fig. 7: 72-76).

Majid-e Sulayman: north-west of the temple of Hercules, ca. 3rd century-150 BCE (Ghrishman 1976, pl. 38: GMIS197).

Larsa: E-Babbar, room 22, 2nd century BCE (Lecomte 1987, pl. 36: 3).

Uruk: U 18 e 1-2 area, level III, 3rd century BCE (Finkbeiner 1992, 552: 761); IV 18 a1 area, level II, 125-50 BCE (Finkbeiner 1992, 575: 986).

¹⁵⁸ Cellerino 2015, 141-142.

¹⁵⁹ Haerinck 1983, 54 and note 133, fig. 8: no. 7, pl. V: no. 6.

¹⁶⁰ de Miroschedji 1981, 31.

¹⁶¹ Hannestad 1983, 72.

Comparisons for no. 97

Choga Mish: Parthian level (Delougaz, Kantor 1996, pl. 72: J).

Larsa: E-Babbar, room 26, 2nd century BCE (Lecomte 1989, pl. 5: 9).

Uruk: J 18 e1 area, 125-50 BCE (Finkbeiner 1991, 621: 234).

Comparisons for nos 98-99:

Larsa: E-Babbar, room 17, end of 2nd century BCE- beginning of 1st century BCE (Lecomte 1983, pl. IX: 10); E-Babbar, room 21, 2nd century BCE (Lecomte 1989, pl. 5: 8).

Uruk: J 18 e1 area, 125-50 BCE (Finkbeiner 1991, 619: 217).

Comparisons for no. 100:

Choga Mish: Parthian level (Delougaz, Kantor 1996, pl. 72: F).

Uruk: J 18 e1 area, 125-50 BCE (Finkbeiner 1991, 619: 208; 622: 235).

Storage jars and pithoi (Fig. 7.38: 101-106)

Only few fragments of pithoi and storage jars (1.77%) have been found at Kal-e Chendar. These must have been storage jars ovoid or globular in shape, having thick sections (1-2.4 cm) and large diameter at their mouth (25.5-34.5 cm). To this type must be probably ascribed also the potsherds decorated by applied ribbings, decorated by finger's or tool's impression. The ware is usually tempered with mineral-organic components, and the dark core, sometimes present, results from low oxygenation of the core itself during the firing. The form of these storage jars derives from their function: indeed, they have a large mouth for allowing the product they contained to be easily available and are decorated by applied ribs that covered the points of junction of the different parts they were composed.¹⁶² This made their carriage effortless.

The storage amphora no. 101 is a unicum. The handles, round in section, usually lacking in the local traditional storage jars, were attached to rim and shoulder. A good parallel can be found with the typical storage amphoras discovered in level II of Seleucia's excavation, occasionally used for infant burials.¹⁶³ A type of storage amphora found during the excavation of the Athenian Agora (Form 7 of Rotroff's typology) and dated to the middle of the 2nd century and the early 1st century BCE, may have provided inspiration for this form. The size of these amphoras suggests that they served for a short-term storage of liquid or also solid food.¹⁶⁴

Comparisons for no. 101:

Seleucia: level II, 116 BCE-43 CE (Debevoise 1934, 79: 183).

Athens: Athenian Agora, middle 2nd century-first decades of the 1st century BCE (Rotroff 2006, fig. 21: 131).

Comparisons for no. 102:

Larsa: E-Babbar, room 23, 2nd century BCE (Lecomte 1987, pl. 18: 1).

Uruk: U 18 e1-2 area, level III, 3rd century BCE (Finkbeiner 1992, 551: 75-6).

Comparisons for no. 103:

Uruk: Gareus Temple, 50-225 CE (Finkbeiner 1991, 507: 495).

Failaka: Hellenistic Fortress, half 3rd century-beginning 1st century BCE (Hannestad 1983, pl. 53: 521).

Comparisons for no. 104:

Susa: Ville Royale II, level 3B, second half 2nd century BCE-first half 1st century BCE (de Miroschedji 1987, fig. 23: 1).

¹⁶² As is well known, storage jars were made by separate parts (slab building) joined together (see Lecomte 1987, 230; Rice 1987, 125).

¹⁶³ Debevoise 1934, 17.

¹⁶⁴ Rotroff 2006, 89.

Larsa: E-Babbar, room 17, end of 2nd century BCE- beginning of 1st century BCE (Lecomte 1983, pl. XVI: 39); maison hellénistique, 2nd century BCE (Lecomte 1989, pl. 9: 11).

Comparisons for no. 106:

Susa: Apadana Est, level 5e-d, end of 3rd century BCE-beginning of 2nd century BCE (Boucharlat 1987, fig. 61: 16); Ville Royale II, level 3A, 1st century CE (de Miroschedji 1987, fig. 25: 13).

Larsa: E-Babbar, room 17, end of 2nd century BCE- beginning of 1st century BCE (Lecomte 1983, pl. X: 12).

7.5 Cooking Ware (Fig. 7.40)

Cooking Ware (28 fragments) is characterized by a coarse fabric with a large amount of calcite and quartz, which improved the resistance to temperature variations when exposed directly to heat, and forms 8.26% of the potsherds collected. The wall surfaces have a reddish brown (Munsell Colour 5YR 5/4 - 4/4; 2.5YR 5/4) to red (Munsell Colour 2.5YR 5/6; 10R 5/6) colour or brown (Munsell Colour 7.5YR 5/4 - 5/3 - 4/3) and brownish grey colour (Munsell Colour 10YR 5/2).

All the cooking potsherds have a dark core, even black in some cases. This colour is originated by incomplete removal of carbonaceous matter, which is the result of an incomplete firing or a relatively low temperature.

This heterogeneous class includes vessels whose function is clearly identifiable for technical and morphological reasons. The form is dictated by functional criteria and therefore scarcely influenced by new ceramic styles, so it is often difficult to date cooking pots precisely. Only during the Seleucid period new types of cooking vessels, borrowed by Greek prototypes, became part of the eastern pottery repertoire. The class has as common denominator a coarse mineral-organic fabric which improved the resistance to heat, rounded or slightly flattened base and wall of consistent thickness. Small gravel, quartzite and calcite and straw are therefore added to the clay mixture. Cooking pots show a careless manufacture although they are all wheel-made.

Two types of cooking vessels have been found at Kal-e Chendar.

In the first case they are closed shapes with a globular or biconical body (Fig. 7.40: 119-120). The mouthpiece is always wide and the neck short, the rim is rounded or slightly everted with a triangular section. The cooking pots of this type are of medium size with a rim diameter between 11 and 14 cm.

Open forms belong to the second typological class (Fig. 7.40: 121-124). In most cases, these are medium-large, deep pans with a diameter of about 25-26 cm. The inwardly thickened rims have a nearly horizontal lip. This inner thickness probably served to prevent spillage.

Most of the cooking vessels come from the excavated trenches except for a shallow slightly carinated casserole with a smoothed outer surface belonging to T23 grave goods.

If the closed shapes are typical of most of the cooking pots at least from the 2nd millennium BCE, the open forms represent a new shape. Found in a very fragmentary state and without handles, they seem borrowed, presumably, from the Greek lopades. The type, produced in Greece from the third quarter of the 5th century BCE, becomes the most popular cooking pot in the Hellenistic age.¹⁶⁵

The form without handles (Form 5 of Rotroff's typology)¹⁶⁶ is particularly widespread from the middle of the 2nd century to the first half of the 1st century BCE not only in Athens but on the Ionian and the Syrian-Palestinian coast. Precisely because of its diffusion in Asia Minor and the Levant, an oriental

¹⁶⁵ Rotroff 2006, 178-179.

¹⁶⁶ Rotroff 2006, 183-186.

origin of the shape has been proposed.¹⁶⁷ Lopades are present, for example, in the pottery assemblage of Seleucia,¹⁶⁸ Failaka¹⁶⁹ and Pasargadae.¹⁷⁰

Comparisons for nos 121-124:

Athens: Athenian Agora, 2nd century-first half of the 1st century BCE (Rotroff 2006, fig. 85).

7.6 Bases

The bases have been analysed considering their ware, morphology and size, for they are scarcely significant if compared with rims. Because of the function they had, the production of bases was indeed less influenced by the variations characterizing the shape and development of the rims during the centuries. Four types of bases have been identified and described according to their ware.

7.6.1 Glazed Ware bases (Fig. 7.32: 38-46)

Disk base - Disk bases are the most common type of base in all categories of glazed vessels. The diameter is consequently highly variable (note the base of the small amphora no. 25 with a diameter of 3.9 cm and the base of the large jug no. 18 with a diameter of 11 cm). The disk-shaped base has a flat or slightly concave underside, with a more or less pronounced thickness (note the high disk of jug no. 17 and the very low base of jug no. 19) but always protruding from the vessel body. Disk base was often cut from the wheel using a tightly stretched string or a blade. This method produced a characteristic off-centre spiral on the clay of the base.

Comparisons for no. 40:

Larsa: E-Babbar, room 24, 2nd century BCE (Lecomte 1987, pl. 20: 14).

Flat base - No sherds of flat bases have been found. However, the small amphora no. 27 has a flat base meeting wall at slight angle.

Ring bases - Ring bases are relatively common. Curiously, they are scarcely represented in the complete vessels and always associated with open forms (see e.g. bowls nos 5-8). This base may also be more or less elevated with rounded or flattened edges. The diameter ranges from about 5-6 to 10 cm. The raised ring base of the bowl with outturned rim no. 14, a type of bowl borrowed from Greek pottery tradition, find parallels with the base of similar bowls dated to late 2nd and early 1st century BCE from the Athenian Agora.¹⁷¹ A unique base of a cylindrical vessel no. 45 has a series of three concentric grooves on the underside. The base no. 46, with concave underside and high ring, was probably inspired by Greek models.

Comparisons no. 46:

Uruk: U 18 e1-2 area, level III, 3rd century BCE (Finkbeiner 1992, 552: 766).

Rounded base - Only the pilgrim flask no. 24 has a rounded, slightly flattened, base. Because rounded bases were not a stable support, the presence of stands, in particular for large jars, associated with them must be considered as certain.

7.6.2 Red Slip Ware bases (Fig. 7.35: 71-73)

The bases associated with the Red Slip ceramic belong to the categories just described.

Flat bases therefore occur exclusively in two cases (amphora no. 64 and miniature pot no. 65).

¹⁶⁷ Rotroff 2006, 186.

¹⁶⁸ Valtz 1991, fig. 3: 28-29.

¹⁶⁹ Hannestad 1983, pl. 58.

¹⁷⁰ Stronach 1978, fig. 113: 1, dated Achaemenid or post-Achaemenid.

¹⁷¹ Rotroff 1997, 159-160, fig. 51: 950-953.

Disk bases are more frequently used, sometimes with a concave underside.

Only jug no. 59 has a very low ring base.

It is conceivable that the thin-walled bowls nos 51-53 had a rounded base as in the Achaemenid prototypes.

7.6.3 Common Ware bases (Fig. 7.39: 107-118)

Most of the fragments of bases found belong to Common Ware class.

Disk base is the most frequent type. The diameter ranges from 6 to 11 cm and the disk has a more or less pronounced thickness. On the basis of the degree of curvature in the walls it is evident that this type of base could be used for both open and closed shapes.

Ring bases are infrequent in Common Ware pottery, but they can be associated with both open shapes and closed forms. The diameter ranges from 6 cm of a probable fragment of a bowl to 19.8 cm of a base belonging to a closed form of medium-large size.

A single flat bases, no. 107 with a diameter of 12 cm and a particularly thick bottom, probably belong to a closed shape.

7.7 Handles (Fig. 7.41: 125-126)

The quite numerous handles found or belonging to complete vessels are for the most vertical strap handles approximately ovoid or rectangular in section. Sometime a slight groove, formed by potter's fingers impressing, decorated the outer face of the handles. Handles are associated to all pottery ware classes except Cooking Ware.

Handles round in section are less represented: they are associated only with the small red slipped amphora no. 62 and the jug no. 89 and the amphora no. 91 in Common Ware.

Twisted rope handles are represented only by three examples belonging to glazed pottery. The origin of the twisted rope handles has probably to be found in the Attic version of West Slope amphora and oinochòde.

The horizontal handle no. 126 and the horizontally attached pierced lug no. 125 are unica.

If the horizontally attached clay rope on the Red Slip deep bowl no. 56 was not a decoration but a handle pressed against shoulder, the type could be very similar to the handle of the Hellenistic lopus, a cooking casserole common also in ancient Near East.

Comparisons for no. 56:

Failaka: Hellenistic Fortress, half 3rd century-beginning 1st century BCE (Hannestad 1983, pl. 58).

7.8 Decorations (Fig. 7.41: 127-133)

Decorations are attested especially on Glazed and Common Ware closed forms. These are very simple and schematic incised or molding motifs. Characteristic is the low ribbing at the base of the neck and a single or double groove alternated with waves, generally occurring on shoulder. The applied molding bands decorated with finger or oblique tool impressions occur frequently in storage jars or pithoi considering the thickness of the walls. Clay pellets, possibly made in imitation of metal rivets,¹⁷² flanked upper or lower handle attachment in jugs nos 17 and 18. A double row of pellets is applied on the outer face of the glazed rim no. 36 found in T24, while on rim no. 95 made in Common Ware,

¹⁷² Rotroff 1997, 120.

coming from surface, a single row of pellets is above bordered by a molding and below by an incised wave. Haerinck suggested that these decorations applied to the rim were typical of the final phase of the Parthian period.¹⁷³

Comparisons for nos 132-133:

Larsa: E-Babbar, room 24, 2nd century BCE (Lecomte 1987, pl. 32: 3).

7.9 Concluding Remarks

The pottery from Kal-e Chendar was found in the funerary sets of T7, T9, T20, T23 (Fig. 11.2) and Gr2 and, to a lesser degree, in disturbed stratigraphic layers. The definition of an archaeological sequence based on pottery distribution is thus problematic, also because of the soil conformation and morphology (see chapter 6.2). Repeated human interventions further disturbed such a context as building materials were continuously re-used and the most recent intervention always destroyed the preceding. In the excavated areas, stratigraphy is thus extremely compressed in favour of the more recent phase of occupation.

Most of the pottery types can be dated by comparisons that particularly depend on the quality and completeness of the information published,¹⁷⁴ including stratigraphic contexts, and precision of the drawings: a range from the 3rd century BCE to the first half of the 1st century CE, corresponding approximately to the ancient and middle Parthian phase, can be circumscribed. Moreover, very simple forms like hemispherical bowls and neckless pots with rounded rim were produced for centuries and are barely diagnostic.

On this premise, it is remarkable that the potsherds from Kal-e Chendar don't find close comparison with materials coming from the highlands of Khuzestan. There are, for instance, almost no similarities with the types and forms found during the survey of the Izeh plain conducted in 1976 by the ICAR and University of Michigan, and edited by H.T. Wright, except for the wares considered characteristic of the Parthian period, namely Glazed Ware, usually green, and Red Slip Ware. Despite that sites appear to have increased in number and size from the Achaemenid to the Sasanian period,¹⁷⁵ the pottery of the Seleucid and Parthian periods is only partially published, and roughly dated, by H. Eqbal.¹⁷⁶ Similarly, the parallels with the pottery types¹⁷⁷ found during the excavation in the nearby site of Hung-e Azhdar, conducted by the Iranian-Italian Expedition,¹⁷⁸ are surprisingly scarce. Some comparisons have been found in different areas of Khuzestan, however (like the Ram Hormuz plain or the site of Choga Mish), southward in Fars (Pasargadae and the Mamasani area), and westward on the Zagros region (Kangavar and Nahavand).

It is also remarkable that the pottery found on the two cult terraces of Bard-e Neshandeh and Majid-e Sulayman, the most important sanctuaries of Hellenistic and Parthian Elymais so far excavated, which are not far from Kal-e Chendar, reveals only few similarities with that coming from our excavation. Glazed amphoriskoi, functionally interpreted as offerings,¹⁷⁹ and glazed small amphoras and bowls with angular profile or flaring rim, are the only forms occurring at the three sites.

Two different traditions have been recognized in the Kal-e Chendar pottery repertoire: on the one hand a local tradition continuing into the Parthian period, represented by the Red Slip Ware, still influenced by late Iron Age productions¹⁸⁰ and echoing Achaemenid forms like carinated bowls with flaring rim; on the other, the Mesopotamian supra-regional Hellenistic tradition, to which also the

¹⁷³ For comparison see above.

¹⁷⁴ The coins, discussed in chapter 9, which could have a value for ceramic chronology, were issued between the late 1st century BCE and the early-mid 2nd century CE.

¹⁷⁵ Eqbal 1979, 116; Wright 1979, 127.

¹⁷⁶ Eqbal 1979, 114.

¹⁷⁷ Cellerino 2015. The majority of the pottery types found in the trenches opened near the well-known Parthian rock relief can be dated from the late Iron Age to the early Parthian period. Only Common Ware pottery was present at Hung-e Azhdar.

¹⁷⁸ Messina (ed.) 2015.

¹⁷⁹ Ghirshman 1976, 15, 87; Haerinck 1983, 14, 28, 36.

¹⁸⁰ de Miroschedji 1987, 34, 93.

pottery production of Susa belongs in consequence of well-known and long-lasting political and cultural contacts,¹⁸¹ represented by the Glazed Ware pottery. Noteworthy, no samples of Eggshell Ware, characterized by particularly thin sections, very fine fabric and a limited, but characteristic, repertoire of forms, are attested, although they are a typical production of Mesopotamia and south-west Iran from the Achaemenid to the Parthian period.¹⁸²

In this complex milieu, the Red Slip forms and surface treatment are independent elements. The forms find interregional comparisons especially with materials dated from the late Achaemenid to Parthian period at Susa as well as Choga Mish, and even sites of Fars, but the surface treatment appears to have a typical local character.¹⁸³ Red Slip pottery, only rarely found at Susa, was dated by Haerinck to the ancient Parthian period (250-150 BCE).¹⁸⁴ The findings of Kal-e Chendar, which were found with glazed pottery as part of the same grave goods, attest both that this class of vessels was still produced at least until the 1st century BCE and the new ceramic repertoire inspired by widespread western models was associated with the production of pottery types that go back to the Achaemenid pottery tradition.

In a context like that of Hellenistic and Parthian Iran, where the pottery production was greatly regionalised,¹⁸⁵ the high occurrence of glazed pottery points to the Mesopotamian tradition of silica-soda-lime glaze, also attested in the ceramic assemblage of the Susa plain and includes the highlands of Khuzestan in the macro-area precisely defined by Hannestad as 'the glazed ware area'. Yellow, green and white glazes are preferred in the 3rd-first half of the 2nd century BCE, blue and turquoise, predominant colours in Kal-e Chendar pottery repertoire, are much more attested from the second half of the 2nd century BCE to the 2nd century CE. It is interesting to note that only at Susa in the Hellenistic levels of the Apadana Est and Ville Royale has been found a limited production of black glazed pottery imitating the black sintering slip of the Greek prototypes.¹⁸⁶

In the so called 'glazed area' the ancient glaze technique was used to produce both types that reflect continuity with the previous morphological traditions, and pottery forms inspired by Hellenistic Western forms, widespread in the Mediterranean from the 4th-3rd century BCE in different techniques such as Black Glaze Ware, West Slope Ware, Megarian Ware.¹⁸⁷

Almost all the distinctive shapes that can be considered as 'fossiles directeurs', according to the definition of de Miroschedji,¹⁸⁸ of the Greek influence on Near Eastern pottery, from the beginning of the 3rd century BCE to the end of Parthian age and beyond, are attested at Kal-e Chendar. Fishplates, bowls with angular profile and outturned rim, amphoras and amphoriskoi have much more numerous comparisons with the pottery found in the Seleucid and Parthian levels of Susa and among the repertoire of glazed pottery from southern Mesopotamian sites as Larsa and Uruk or Failaka in the Persian Gulf and, it is noteworthy, with similar shapes produced in Athens in black glaze or in West Slope technique dated between the second half of the 3rd century and the first decades of 1st century BCE. A significant indicator that seems too constant to be explained as coincidence, considering that even in the Aegean area it is generally accepted that the Hellenistic pottery koine has an Attic origin, such that Furtwängler defines it as an 'Athenian koine'.¹⁸⁹

The diffusion of Hellenistic ceramic types is certainly more evident in the major urban centres investigated to date, whether they are new foundations such as Seleucia¹⁹⁰ or ancient settlements

¹⁸¹ Boucharlat 2005, 245.

¹⁸² Haerinck 1983, 19-20 (for the Parthian period); Cellierino 2004, 99-103.

¹⁸³ Form and decoration are often independent components, as Puschnigg remarks in a recent study on some types of pottery from Central Asia and Western Iran (Puschnigg 2019, 159).

¹⁸⁴ Haerinck 1983, 24.

¹⁸⁵ Haerinck 1983, 238-257.

¹⁸⁶ Boucharlat 1987, 187.

¹⁸⁷ Blondé et al. 2002.

¹⁸⁸ de Miroschedji 1987, 43

¹⁸⁹ Furtwängler 1997, 399; Laftsidis 2019, 212, note 67.

¹⁹⁰ Valtz 1984; 1993.

such as Uruk¹⁹¹ or Susa,¹⁹² but the situation in smaller sites or isolated regions, cut off from the main trade routes, has less defined outlines.¹⁹³ In this context, Kal-e Chendar represents, therefore, an interesting case study. The excavation of this complex of Hellenistic and Parthian Elymais¹⁹⁴ brought to light monumental terraces similar to those of the nearby sanctuaries of Majid-e Sulayman and Bard-e Neshandeh, but surrounded by a wide cemetery, including monumental tombs built in undressed stones, suggesting that religious and funerary functions were strictly interrelated.¹⁹⁵ The glazed pottery found as funerary gifts in the excavated chamber tombs and, to a lesser degree, in the stratigraphic layers, represents the 35.69% of the ceramic assemblage and the majority of the preserved examples are Greek-inspired types.

To the same milieu strongly influenced by Hellenistic models, we can also refer others grave goods such as the gold mouth covers and diadem decorated with floral and geometric designs and the bronze pin with an embracing couple, wearing Greek chiton and himation, seated on a lotus flower.¹⁹⁶ It would be tempting to attribute the production of pottery and jewellery to the main site of the region, Izeh-Malamir, during the reign of the local Kamnaskirid dynasty, where at least part of the local population and workshops were certainly aware of Hellenistic figurative language as shown by the bronze and marble statues discovered in the 1935 at Kal-e Chendar.¹⁹⁷

7.9.1 *Supra-regional trends and local adaptations in Hellenistic pottery production in the 'glazed ware area'*

The increased impact of Greek culture after the Alexander's conquest and the new Graeco-Macedonian political dominance over the satrapies of the fallen Achaemenid Empire, generated, during what we call the Hellenistic age, an intensification of cross-regional connectivity by the unprecedented circulation of peoples, ideas, objects, and technologies. These multifarious interactions composed a complex, extended, in short, global system of networks of different character where ideas and things connecting different cultures (and everything these entailed) over long distance, transformed local societies in various ways generating a material and cultural koine. In different periods of the history of the Mediterranean and the Near East tendency to far-reaching connectivity led to the creation of societies in which different backgrounds, traditions, and languages, participating in supra-regional networks, experimented, among other interrelations and to various degrees, with cultural and social interactions.

In archaeology these interactions can be verified by the analysis of different kinds of materials and interpreted considering what the recent literature defines as a global perspective or globalization theory. Developed in the 70s of the 20th century from social and economic studies,¹⁹⁸ the utility and significance of the globalization theory in socio-historical sciences, such as archaeology, was promptly recognized and adopted for the study of pre-modern world, stretching back into prehistory.¹⁹⁹ Studies on globalization have become a way to describe with a more global point of view both the processes and the effects of ancient interconnections and to explain cross-cultural contacts, appropriation and connectivity that gave rise to simultaneous phenomena of homogenization and hybridization of cultures.²⁰⁰

The use of globalization theory regarding Antiquity has not gathered a general consensus and some authors have adopted a more restricted definition maintaining the term for modern world and

¹⁹¹ Finkbeiner 1993; Petrie 2002.

¹⁹² Boucharlat 1993.

¹⁹³ Puschnigg 2019, 160.

¹⁹⁴ The monumental religious complex of Kal-e Chendar could have been the place of a dynastic sanctuary at least from the 2nd century BCE (Sherwin-White 1984).

¹⁹⁵ On the excavation campaigns see chapter 6.

¹⁹⁶ See chapter 9.

¹⁹⁷ On the bronzes sculptures from Kal-e Chendar, that include two groups of 'Greek-style' figures, see Lindström 2019.

¹⁹⁸ Gopinath 2008.

¹⁹⁹ Pieterse 2012; Boivin, Frachetti 2018.

²⁰⁰ Many studies have been devoted to globalization and connectivity in the ancient world. See for all: Pieterse 1995; Appadurai 2001; Hopkins (ed.) 2002; Sherratt 2003; LaBianca, Scham 2006; Jennings 2010; 2017; Kardulias 2014; Hodos (ed.) 2017. See for the Hellenistic and Roman world: Hingley 2005; Geraghty 2007; Erskine, Llewellyn-Jones (eds) 2011; Pitts, Versluys (eds) 2015.

suggesting for pre-modern and prehistoric periods an embryonic form of ‘globalization-lite’.²⁰¹ The extensive processes of globalization co-occur with more limited and heterogeneous globalisation processes.²⁰² This notion, born to localise economic strategies of multinational corporations, in the context of historical and archaeological sciences indicates how the global trends were accepted, or not, developed and adapted and often transformed by local communities.

As far as can be deduced on the basis of known documents, the Hellenistic ‘global’ culture, spreading over an increasingly integrated world, had a considerable impact also on a mass product such as pottery. Pottery production was involved in complex phenomena of coexistence of global and local trends that led to the adaptation, imitation, or original interpretation of Greek pottery types. In this perspective the study of pottery –the most abundant material evidence in archaeological research– can help to illuminate and explain, within the Hellenistic world, different forms of networks dynamics and cultural interplay as expressed in materiality.²⁰³

In a network theoretical approach, things are not only indicator and evidence of interactions between and within ancient societies, but agents in social dynamics. Pottery as an artefact which is produced and used everywhere in Antiquity can shed light on many aspects of cultural interactions encapsulating technological, economic, and also political networks. Taking into account the large variety of local situations, pottery can illustrate both the impact of Greek tradition on local productions and how non-Greek communities globalised in different ways various aspect of shape, decoration, and also use of vessels. Indeed, the introduction of a range of shapes characteristic of western pottery, attested not only all over the Mediterranean but across a wide geographic area extending from Mesopotamia to the Persian Gulf and Central Asia, did not preclude localised adaptation. It is often not possible to follow step by step the chronological order of the introduction of the western types and the development of their production, but it seem probable that an initial phase of importation was followed by a phase of imitation,²⁰⁴ both scarcely documented in many area of the Near East.²⁰⁵ The last stage of this development is represented by a phase of original and innovative appropriation and adaptation²⁰⁶ of selected shapes, that was the answer of local workshops to the spread of Western cultural influence.

In the Hellenized East, glazed ceramics seem to satisfy the demand of a majority of local people and a minority of Greek and Macedonians, belonging to various social classes. The introduction of many Hellenistic types into the pottery repertoire led to the creation of an extremely varied production and was counterbalanced by the continuity in manufacturing techniques and in surface treatments and decoration that closely followed ancient regional patterns. Hellenistic and Parthian pottery production in many regions of the Near East shows both an appropriation and an original interpretation of shapes derived from the Mediterranean repertoire, and a certain level of continuity in other sources of inspiration, especially including locally rooted tradition and the supra-regional Achaemenid style.

In ceramic styles, appropriation and adaptation are frequent. The forms and surface treatments of these ‘hybrid’ vessels seems to have been chosen by the population, Greek and Macedonian and local people, for reasons probably related to taste and reached a wide audience. The choice of specific Western shapes was probably also determined by their similarity with types belonging to the local ceramic repertoire and responding to local needs and, at least for a part of the local population, to

²⁰¹ Jennings 2010, 142.

²⁰² Robertson 1994.

²⁰³ Global Hellenistic trends are reflected in material culture in various regions of the Mediterranean and the Near East and are particularly manifest in the production of pottery, terracotta figurines and seals. See among the most recent publications: Kouremenos et al. (eds) 2011; Fenn, Römer-Strehl (eds) 2013; Guldager Bilde, Lawall (eds) 2014; Japp, Kögler (eds) 2016; Peignard Giros (ed.) 2019; Kamenjarin, Ugarčić (eds) 2020.

²⁰⁴ For this process of imitation Laftsidis adopted the definition of ‘anxiety of influence’ borrowed by the important book of H. Bloom published in 1973 on the theory of poetry (Laftsidis 2022, 486).

²⁰⁵ The Hellenistic pottery, imported and locally produced, found at Gordion, the capital of Phrygia, illustrates all these different phases (Stewart 2013; Laftsidis 2019, 220-221).

²⁰⁶ Laftsidis 2022, 476; Cellerino 2023.

an aspiration to conform to Hellenistic culture and, to a certain extent, to some newly introduced habits.²⁰⁷

In the so called ‘glazed area’ the influence of Greek prototypes on the local pottery never led to a passive imitation and indeed, the repertoire of extremely varied types and forms was manufactured almost exclusively in traditional ware such as Glazed or Eggshell Ware.²⁰⁸

Whether the emergence of these hybrid production, not only with regard to ceramics,²⁰⁹ reflects a change of habits and the adoption of Greek customs according to different degrees of social or cultural interactions, is difficult to recognise.

However, the distinct pottery traditions were assimilated into a new pottery repertoire which illustrates how, in the Hellenistic globalizing world, the local receptiveness facilitated the incorporation of new cultural elements in the ceramic production. The Hellenistic international pottery types remain identifiable for a long time as common elements in different regional ceramic repertoire from the Mediterranean coast to Central Asia.²¹⁰ Therefore, the terms ‘convergence’ and ‘divergence’²¹¹ used by Laftsidis to describe the reaction of local potters and population to the introduction of new exogenous elements in pottery production are not exactly appropriate. Indeed, the combination of traditions does not suggest a simple acceptance or rejection of Greek models in Mesopotamian and Iranian ancient societies but a mutual exchange of cultures and ideas amongst local population and Greek settlers even if the question about the impact of these interactions on cultural and social processes remains in many case elusive

The idea of a hellenization of local ethne can then be definitely replaced by the concepts of ‘cultural transfers’ or ‘cultural hybridization’.²¹² The hypothesis of Hannestad that a strong influence on the pottery of a given site or area reflects a correspondingly strong Greek colonization and that the degree of hellenization reflects the number of Greek colonists,²¹³ according to a global perspective does not seem completely shareable so far. While it is an indisputable fact that the presence of western pottery types is not uniformly distributed and some villages, areas, or also regions were not deeply affected by the Greek conquest and were never in direct contact with the colonists, the major urban centres of the Seleucid and Parthian Empire, like Seleucia or Susa, must have become central hubs, crucial not only in political and economy network but also playing an essential role within cultural networks in the diffusion and transmission of models and new trends.

²⁰⁷ Laftsidis 2019, 221, note 105.

²⁰⁸ The black glazed vessels found at Susa represent a unique case of real imitation difficult to interpret, see above.

²⁰⁹ Westh-Hansen 2011; Messina 2021.

²¹⁰ Puschnigg 2008.

²¹¹ These terms, used to understand the phenomenon of linguistic koine, has been applied also to the ceramic koine (Laftsidis 2019, 206, 211, 222).

²¹² Stockhammer 2012.

²¹³ Hannestad 1983, 118.

no.	trench/ tomb	su	inv. number	fabric	fabric colour	ext. surface	int. surface
1	T7	1	P2	M/O	5YR 7/4	White	Greenish white
2	Tr12	9		M/O	2.5Y 8/3	Turquoise- yellowish white	Yellowish white
3	T23a			M/O	2.5Y 8/3	Yellowish white	Yellowish white- light blue
4	T20		P6	M/O	7.5YR 8/4	Yellowish white	Yellowish white- light blue
5	T23a		P7	M/O	2.5Y 8/2	Turquoise- yellowish white	Yellowish white
6	T23a		P8	M/O	2.5Y 8/2	Greenish-light blue	Yellowishwhite- light blue
7	T23a		P9	M/O	10YR 8/2	Turquoise- greenish white	Turquoise- yellowish white
8	T23a		P13	M/O	7.5YR 7/3	Turquoise- yellowish white	Turquoise- yellowish white
9	T23a		P10	M/O	10YR 8/2	Green-greenish white	Turquoise- greenish white

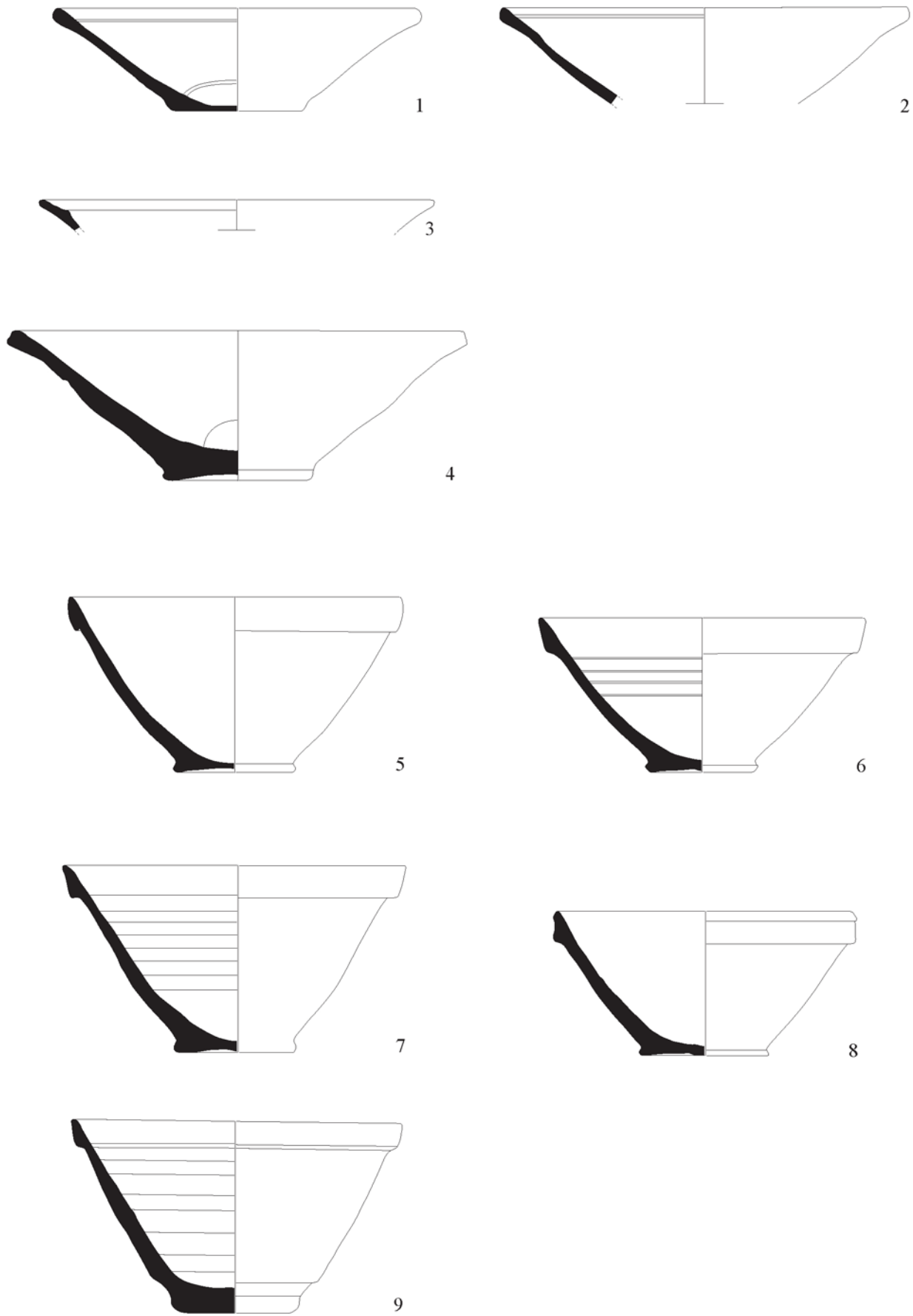


Figure 7.26 - Glazed Ware. Plates and bowls with band rim

No.	Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
10	Gr2	15	P35	M/O	10YR 7/3	Turquoise- greenish white	Turquoise- greenish white
11	T23a		P11	M/O	5YR 8/3	Turquoise- greenish white	Turquoise- greenish white
12	T23a		P14	M/O	2.5Y 8/3	Light blue- turquoise	Light blue- turquoise
13	T20		P4	M/O	5YR 6/6	Yellowish white	Yellowish white
14	T23a		P12	M/O	2.5Y 8/2	Turquoise- greenish white	Turquoise- greenish white
15	T23a		P24	M/O	10YR 8/3	Turquoise- greenish white	Turquoise- greenish white
16	T23a		P29	M/O	7.5YR 7/3	Greenish- turquoise	Whitish- turquoise

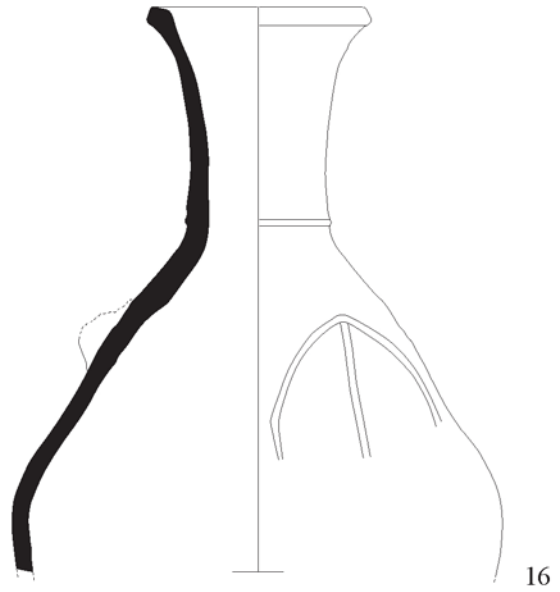
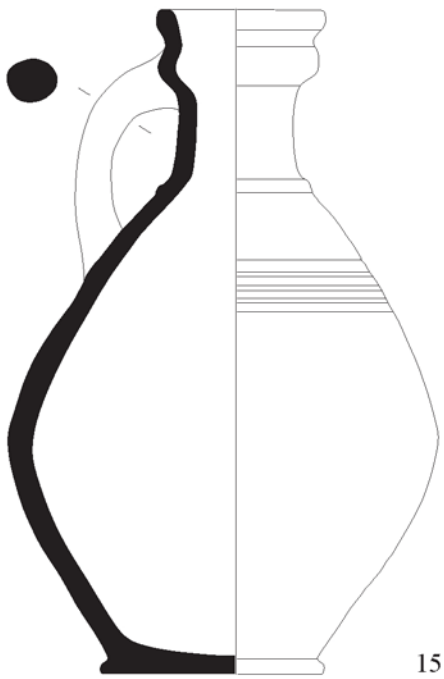
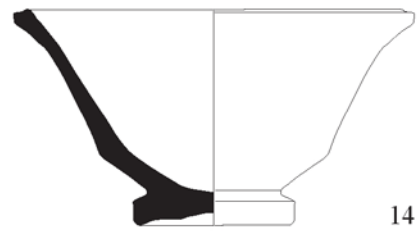
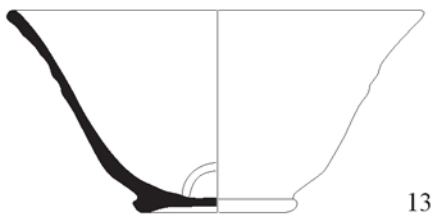
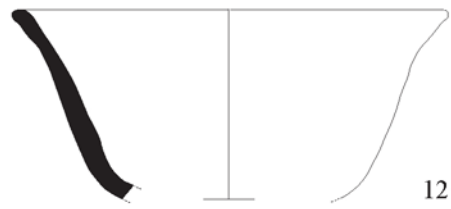
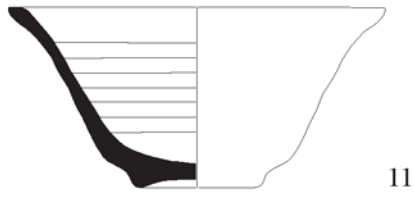
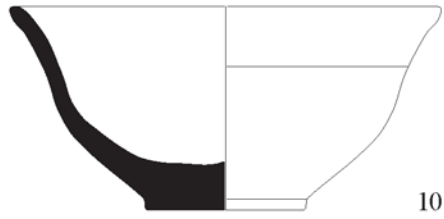
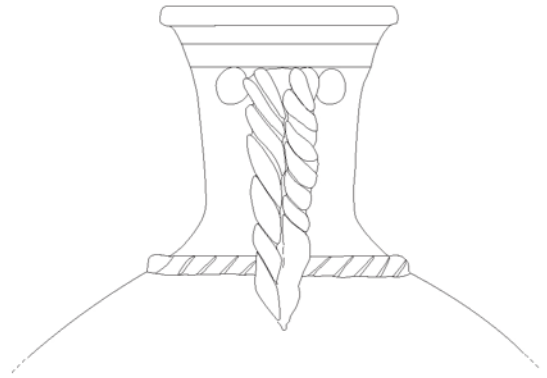
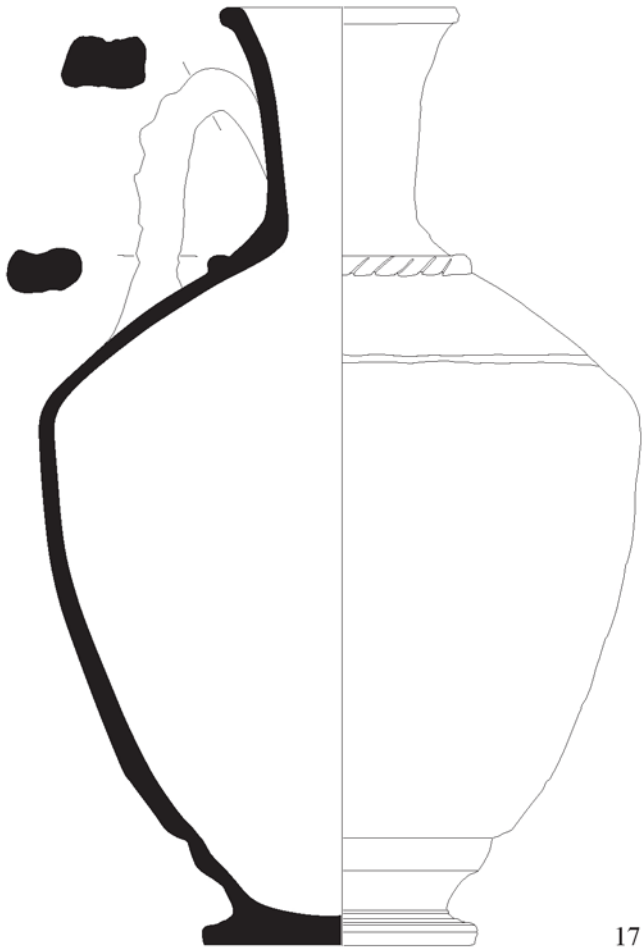
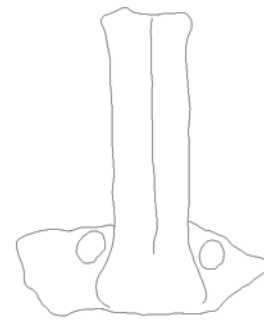
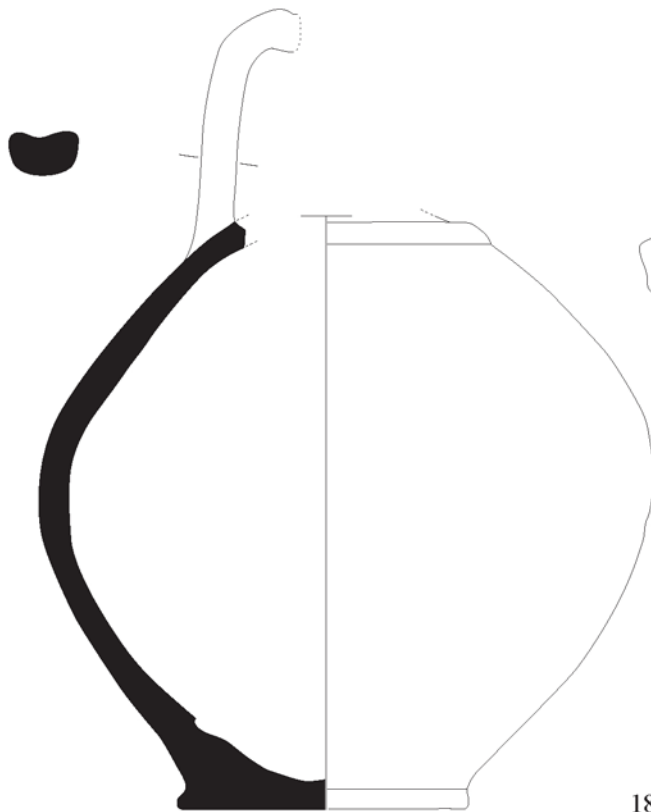


Figure 7.27 - Glazed Ware. Bowls with angular profile and outturned rim and jugs

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
17	T23a		P22	M/O	7.5YR 7/4	Turquoise- greenish white	Turquoise- greenish white
18	T23a		P25	M/O	10YR 8/3	Turquoise- greenish blue	Turquoise- greenish white



17



18

Figure 7.28 - Glazed Ware. Jugs

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
19	T23a		P26	M/O	2.5Y 8/3	Turquoise- greenish blue	Turquoise- greenish white
20	T23a		P27	M/O	10YR 8/4	Whitish- turquoise	Turquoise- greenish white

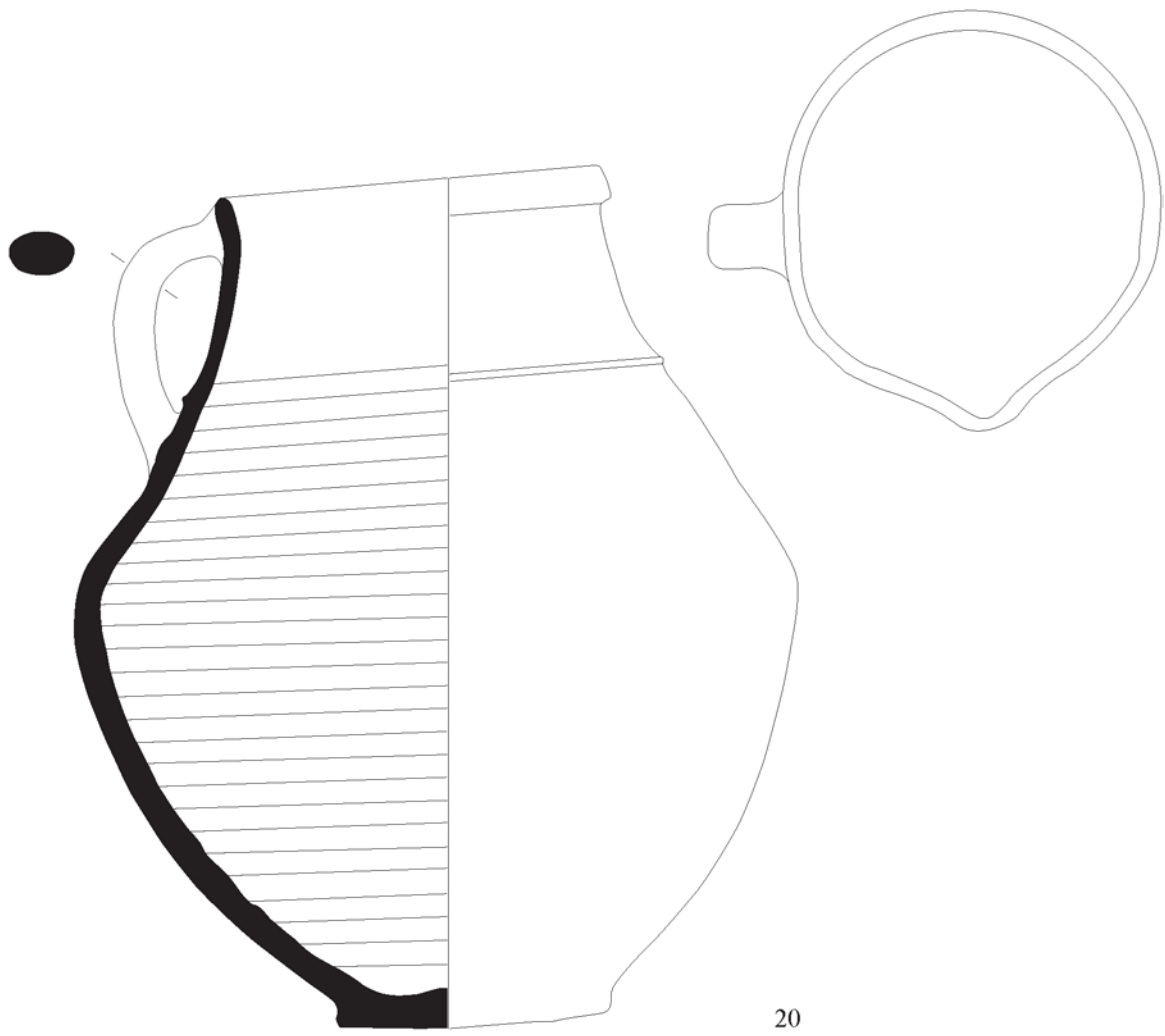
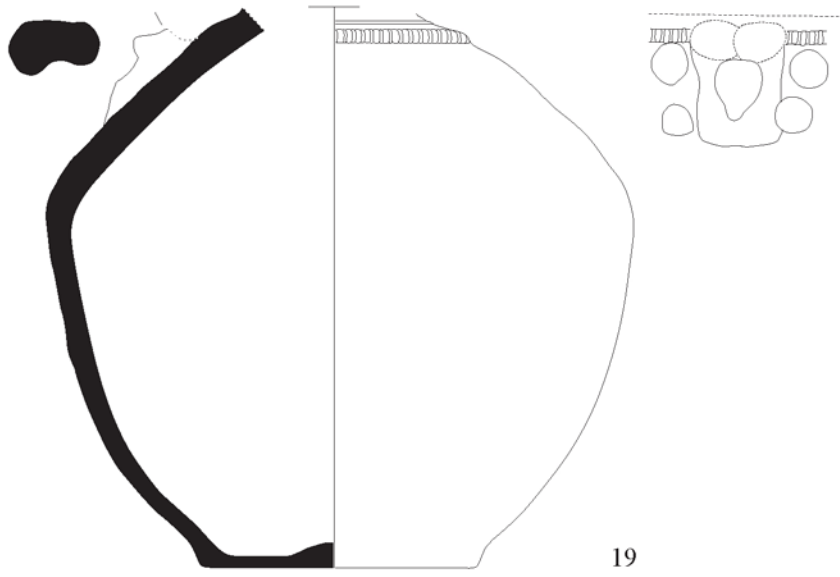


Figure 7.29 - Glazed Ware. Jugs

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
21	T23a		P23	M/O	10YR 8/2	Whitish- turquoise	Whitish- turquoise
22	T9			M/O	5Y 8/4	Green	Green
23	T23a		P30	M/O	7.5Y 7/3	Whitish- turquoise	Whitish- turquoise
24	T23a		P31	M/O	10YR 8/2	Yellowish white- turquoise	Yellowish white- turquoise

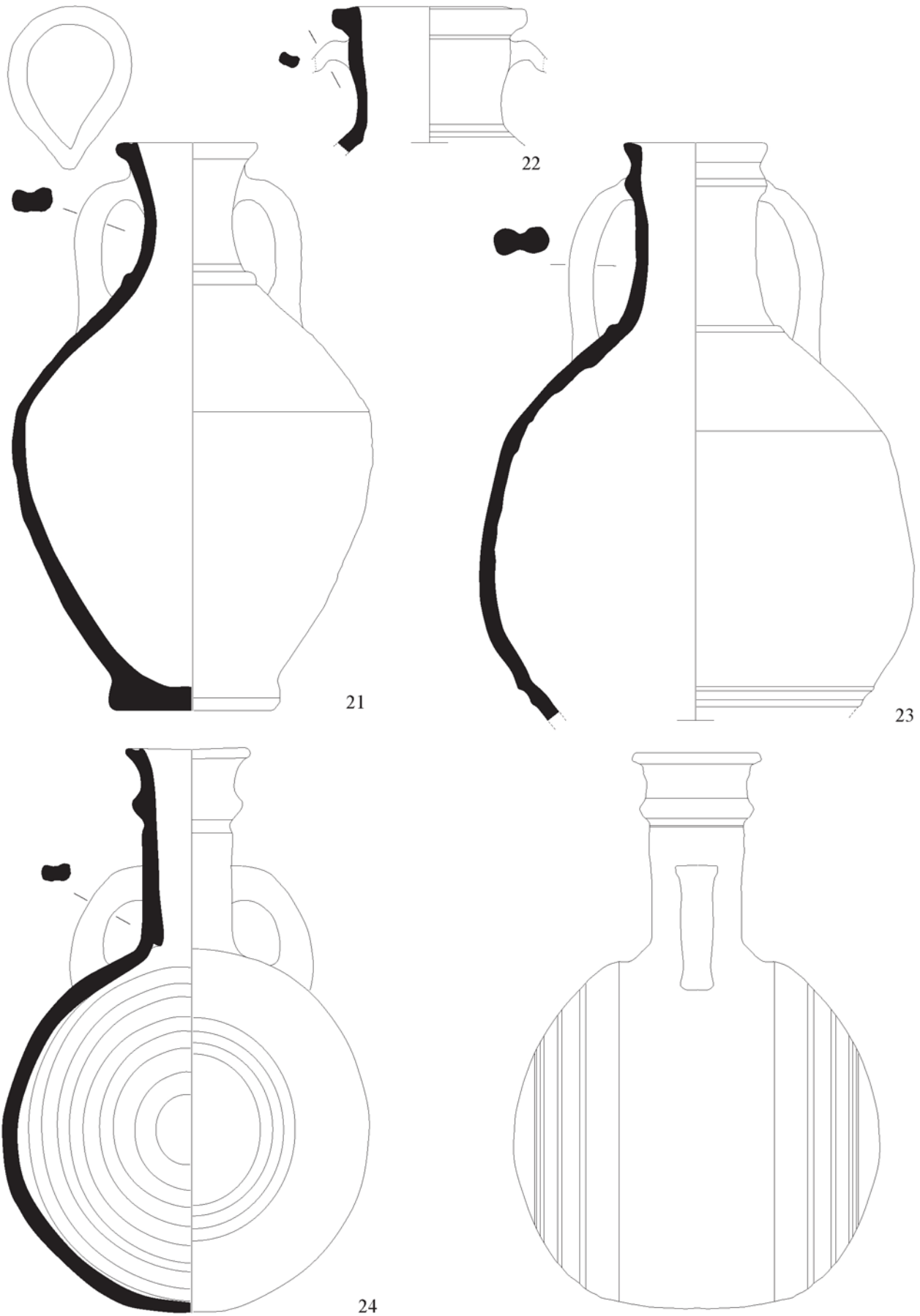


Figure 7.30 - Glazed Ware. Amphorae and pilgrim flask

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
25	T23a		P18	M/O	10YR 8/3	Turquoise- greenish white	Turquoise
26	T7		P1	M/O	10YR 8/4	Green-yellowish	Yellow
27	T28		P34	M/O	2.5Y 8/4	Yellow	Yellow
28	Gr2		P33	M/O	2.5Y 8/3	Turquoise- Yellowish	Turquoise- Yellowish
29	T23a		P16	M/O	10YR 7/3	Turquoise- greenish white	Turquoise- greenish white
30	T23a		P17	M/O	10YR 8/3	Greenish-light blue	Greenish-light blue
31	T23a	20		M/O	10YR 8/2	Turquoise- greenish white	Turquoise- yellowish white
32	T23a		P20	M/O	10YR 8/4	Turquoise- greenish white	Turquoise- greenish white
33	T23a	20		M/O	7.5YR 7/6	Light blue	Light blue
34	T23a		P21	M/O	10YR 8/3	Green-yellowish	Green-yellowish

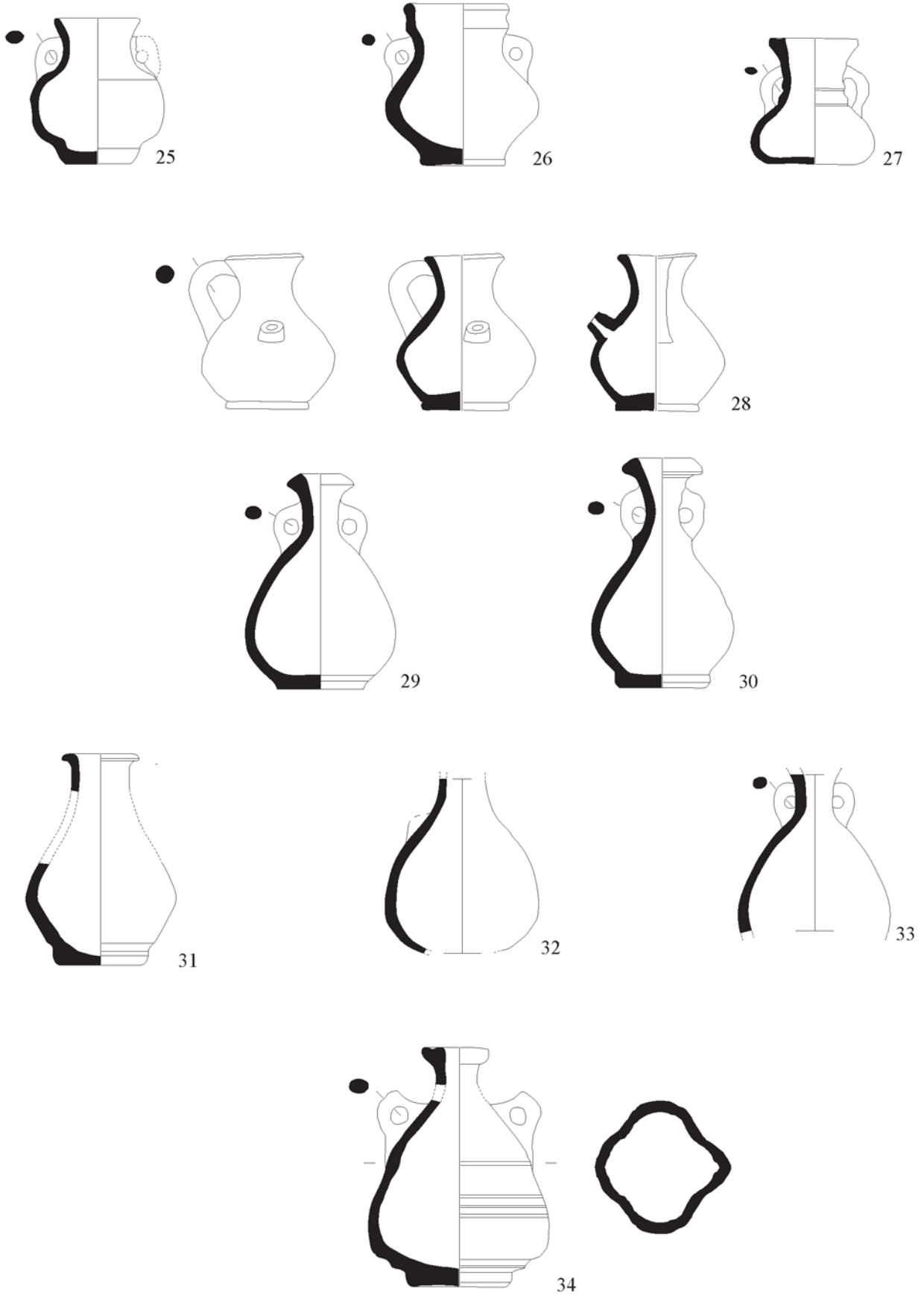


Figure 7.31 - Glazed Ware. Small pots and amphoriskoi

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
35	Tr8	12		M/O	10YR 8/3	Turquoise- greenish white	Turquoise
36	T24			M	2.5Y 8/4	Yellowish-white	Yellowish-white
37	T23a			M/O	10YR 8/3	Yellowish-white	Yellowish-white
38	Tr12	5		M/O	10YR 8/2	Yellowish-white	Yellowish-white
39	Tr9	6		M/O	2.5Y 8/2	Yellowish-white	Yellowish-white
40	Tr9	1		M/O	2.5Y 8/4	Yellow	Yellow
41	T23a			M/O	7.5YR 7/3	Yellowish-green	Yellowish-green
42	Tr7	2		M/O	10YR 7/4	Turquoise- greenish white	Turquoise- greenish white
43	T23	4		M/O	7.5YR 7/4	Turquoise- greenish white	Turquoise- greenish white
44	T23	4		M	10YR 8/3	Turquoise-green	Turquoise-green
45	T9			M	5Y 8/4	Turquoise-green	Turquoise-green
46	T23a	4		M/O	5YR 6/4	Turquoise- greenish white	Turquoise- greenish white

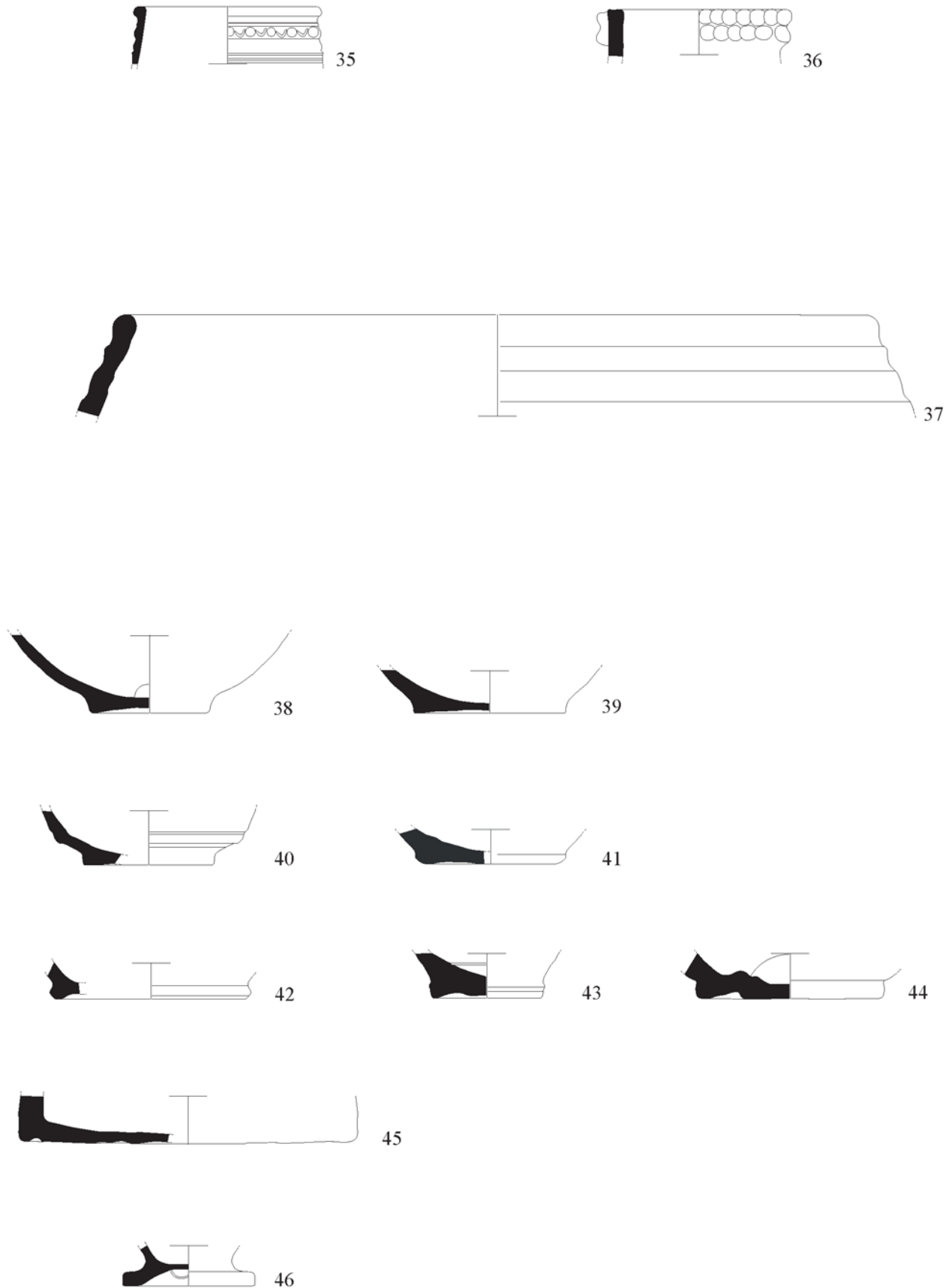


Figure 7.32 - Glazed Ware. Miscellaneous shapes and bases

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
47	Tr12	9		M/O	5YR 7/6	2.5YR 7/8	2.5YR 7/8
48	T23	4		M/O	2.5YR 6/8	2.5YR 4/6	2.5YR 4/8
49	T23a			M/O	5YR 7/6	5YR 6/6	5YR 6/6
50	T23a			M/O	5YR 7/6	2.5YR 5/8	2.5YR 5/8
51	T23a			M/O	7.5YR 7/4	10R 5/4	10R 5/6
52	T20		P5	M/O	7.5YR 7/6	2.5YR 5/6	2.5YR 5/6
53	Tr10	7	P32	M/O	10YR 7/4	2.5YR 6/8	2.5YR 5/4
54	Tr9	4		M/O	2.5YR 7/6	10R 5/8	10R 5/8
55	Tr1	6		M/O	2.5YR 6/8	10R 6/8	10R 5/8
56	Tr1	1		M/O	7.5YR 8/2	10R 6/8	7.5YR 7/6

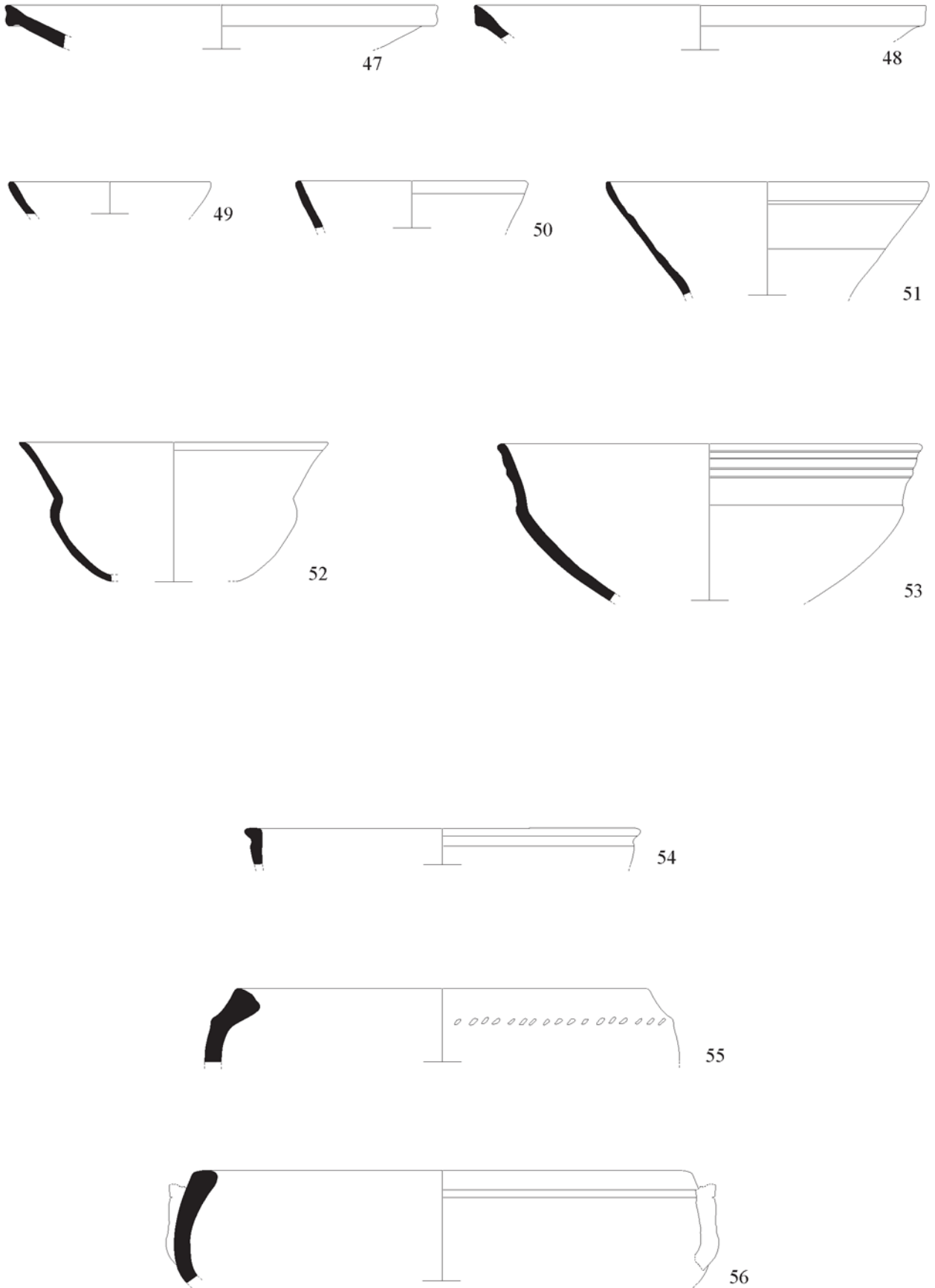


Figure 7.33 - Red Slip Ware. Plates and bowls

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
57	T20			M/O	7.5YR 7/6	2.5YR 4/6	2.5YR 5/8
58	T23	4		M/O	10R 6/6	10R 5/6	10R 5/8
59	T20		P3	M/O	5YR 6/6	2.5YR 5/8	2.5YR 5/8
60	T23a	20		M/O	5YR 6/6	2.5YR 4/8	2.5YR 4/8
61	T23b	9		M/O	5YR 7/6	2.5YR 4/6	2.5YR 4/8
62	Tr1	3		M/O	7.5YR 6/4	10R 4/8	10R 4/8
63	Tr1	16		M/O	10R 5/8	10R 5/4	10R 5/5
64	T23a		P19	M/O	dark core	2.5YR 5/8	2.5YR 5/8
65	T23a		P15	M/O	7.5YR 7/4	2.5YR 6/8	2.5YR 5/8

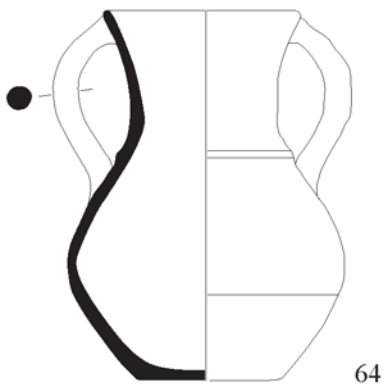
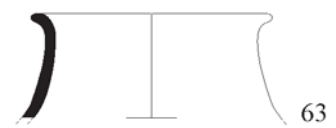
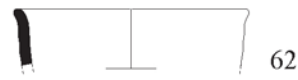
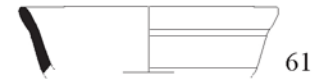
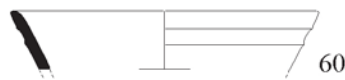
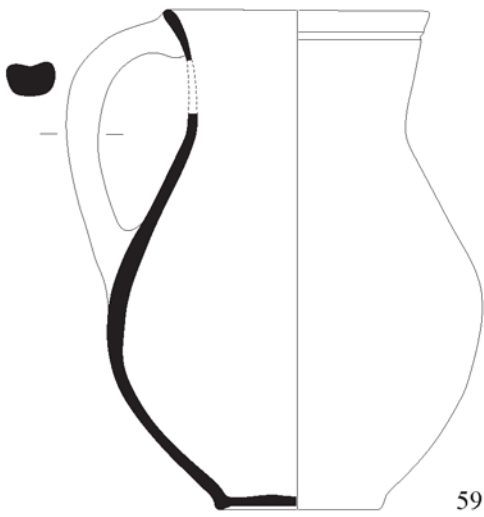
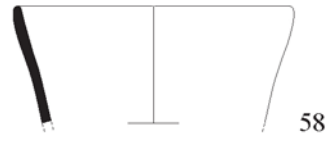
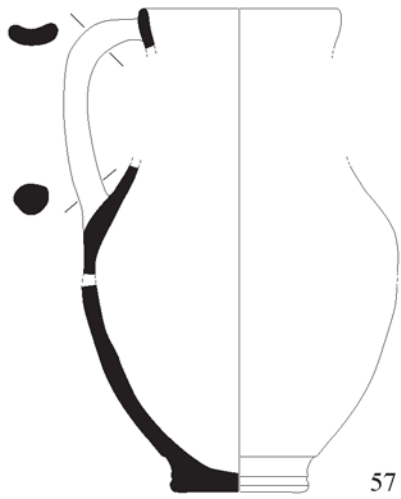


Figure 7.34 - Red Slip Ware. Jugs, amphora and miniature pot

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
66	T23a			M/O	10YR 8/2	2.5YR 5/4	2.5YR 5/4
67	Tr7	2		M/O	7.5YR 7/6	10R 5/8	10R 5/8
68	T23a			M/O	Dark core	10R 5/6	10R 5/6
69	T23a		P28	M/O	5YR 7/6	2.5YR 5/6	2.5YR 5/8
70	Tr1	3		M/O	Dark core	10R 5/8	10R 5/8
71	T23a			M/O	7.5YR 7/4	10R 4/6	10R 4/6
72	T23b	9		M/O	7.5YR 7/6	2.5YR 4/6	2.5YR 5/6
73	T23	4		M/O	2.5YR 6/8	10YR 6/8	10YR 6/8

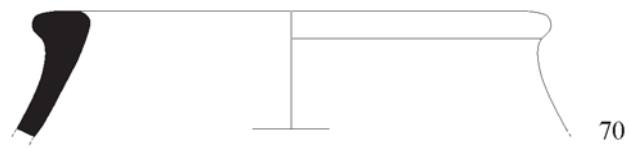
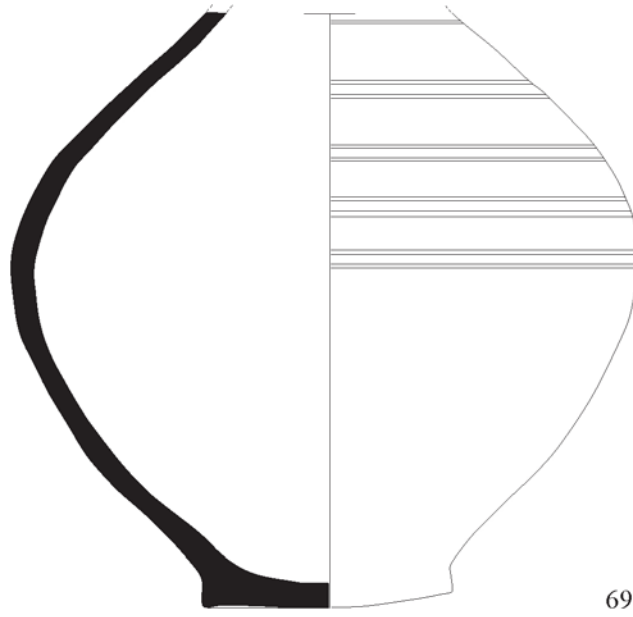
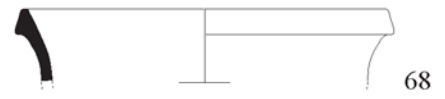
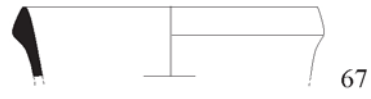
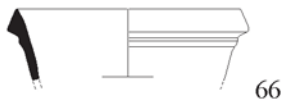


Figure 7.35 - Red Slip Ware. Jars, pots and bases

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
74	Tr1	7		M/O	5YR 5/6	5YR 5/6	5YR 5/6
75	Tr1	16		M	Dark core	5YR 6/6	5YR 6/6
76	T23	4		M/O	7.5YR 7/4	7.5YR 7/4	7.5YR 7/4
77	T23b	6		M/O	2.5Y 7/6	10YR 7/6	10YR 7/6
78	Tr1	16		M/O	Dark core	2.5YR 6/6	2.5YR 5/6
79	Tr1	7		M/O	Dark core	2.5YR 5/8	2.5YR 5/8
80	T23a			M/O	2.5YR 6/6	10R 5/6	10R 5/6
81	T9			M/O	2.5Y 7/4	2.5Y 8/4	2.5Y 8/4
82	T9			M/O	2.5Y 7/4	2.5Y 8/4	2.5Y 8/4
83	T23	4		M/O	10YR 8/4	7.5YR 5/2	7.5YR 5/2
84	T23			M/O	10YR 8/3	10YR 8/2	10YR 8/2
85	Tr1	1		M/O	Dark core	5YR 6/6	7.5YR 5/4
86	Tr12	5		M/O	Dark core	2.5YR 4/6	2.5YR 4/6

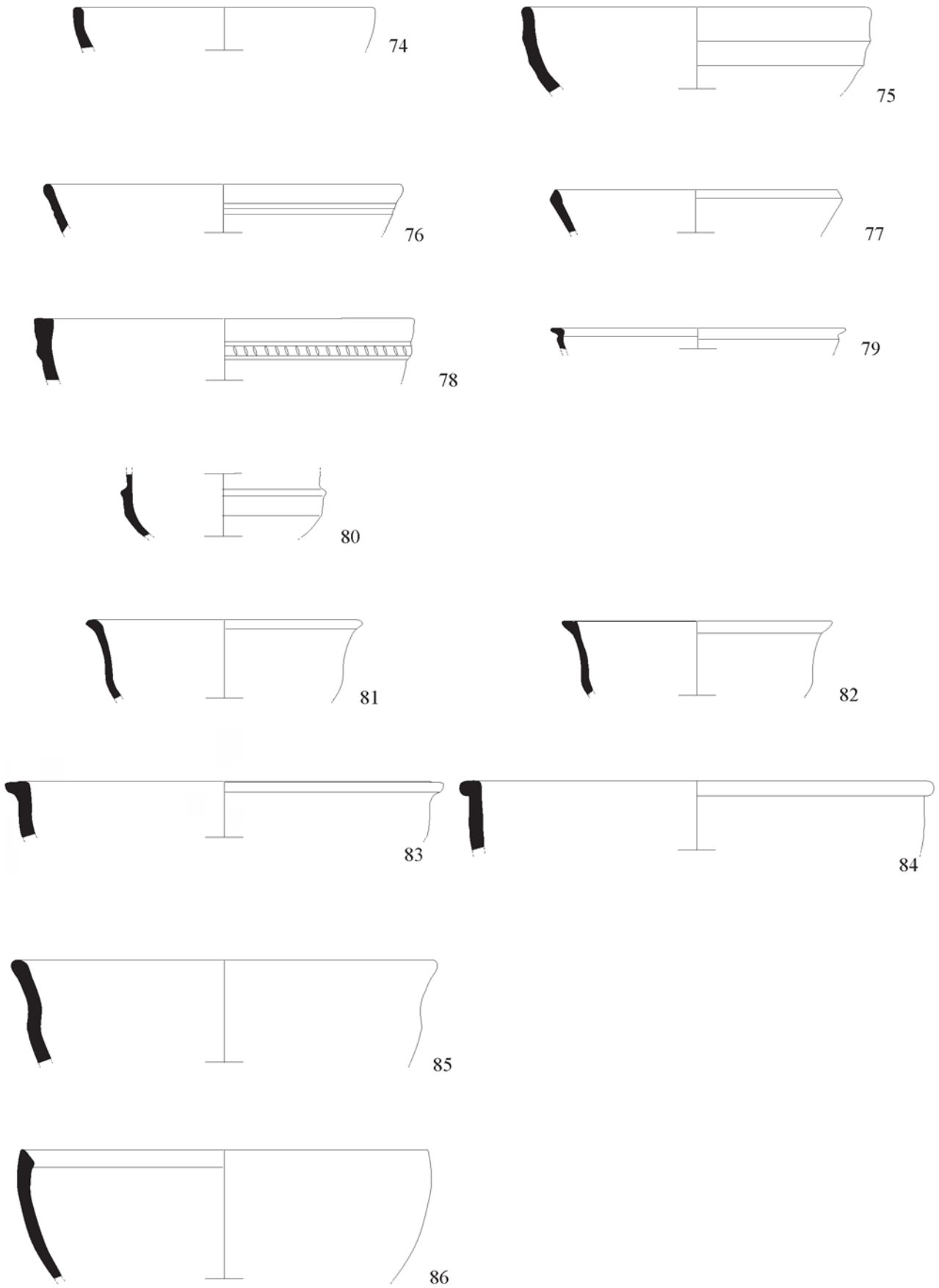


Figure 7.36 - Common Ware. Small to large bowls

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
87	T23	4		M/O	10YR 7/4	10YR 7/4	10YR 7/4
88	T20			M/O	Dark core	2.5YR 6/6	2.5YR 6/6
89	Tr1	16		M/O	Dark core	7.5YR 6/6	7.5YR 4/3
90	Tr1	16		M/O	7.5YR 6/8	7.5YR 6/8	7.5YR 6/8
91	Tr1	16		M/O	Dark core	5YR 5/6	5YR 5/8
92	T20			M/O	5YR 6/8	5YR 7/6	5YR 6/6
93	Tr12	9		M/O	7.5YR 5/3	7.5YR 5/3	7.5YR 5/3
94	T23a			M/O	7.5YR 8/3	7.5YR 8/3	7.5YR 8/3
95	Surface			M/O	5YR 5/6	7.5YR 6/6	5YR 5/6
96	Tr3			M/O	Dark core	10R 4/8	GLE Y 2.5/1
97	Tr8	12		M/O	5YR 5/6	5YR 5/8	5YR 6/8
98	T23	4		M/O	Dark core	5YR 4/6	5YR 5/6
99	T23	4		M/O	Dark-core	5YR 4/2	2.5YR 6/6
100	Tr1	7		M/O	Dark core	7.5YR 6/4	7.5YR 4/4

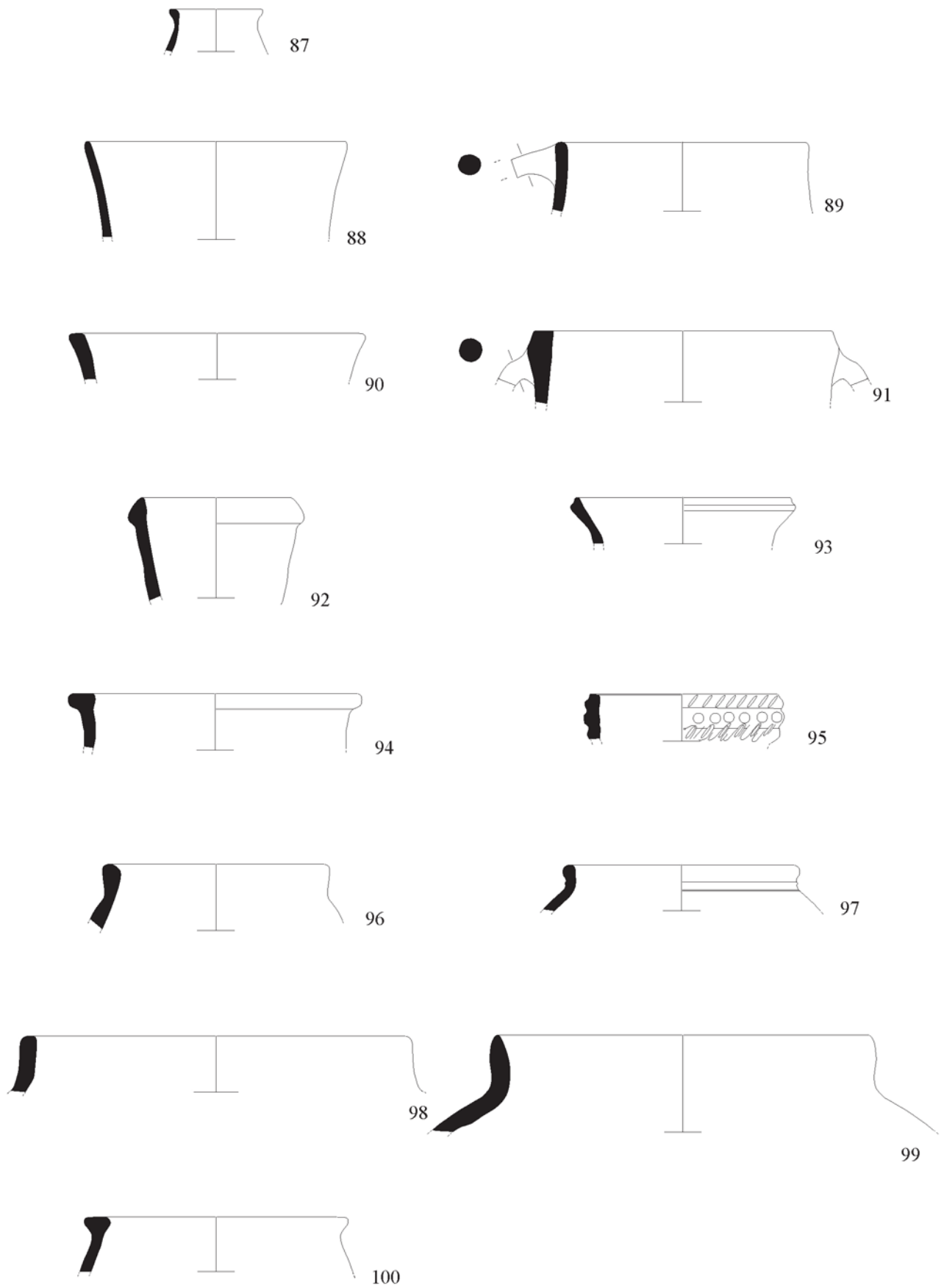


Figure 7.37 - Common Ware. Jars, jugs, amphora and pots

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
101	Tr1	7		M/O	7.5YR 6/6	7.5YR 6/8	7.5YR 6/6
102	Tr10	Surf.		M/O	Dark core	5YR 6/6	5YR 6/6
103	Tr12	5		M/O	5YR 5/6	7.5YR 6/6	5YR 5/6
104	Tr1	7		M/O	Dark core	7.5YR 6/4	7.5YR 6/4
105	T23	4		M/O	7.5YR 7/4	10R 5/2	10R 5/2
106	Tr10	17		M/O	5Y 7/3	5Y 7/3	5Y 7/3

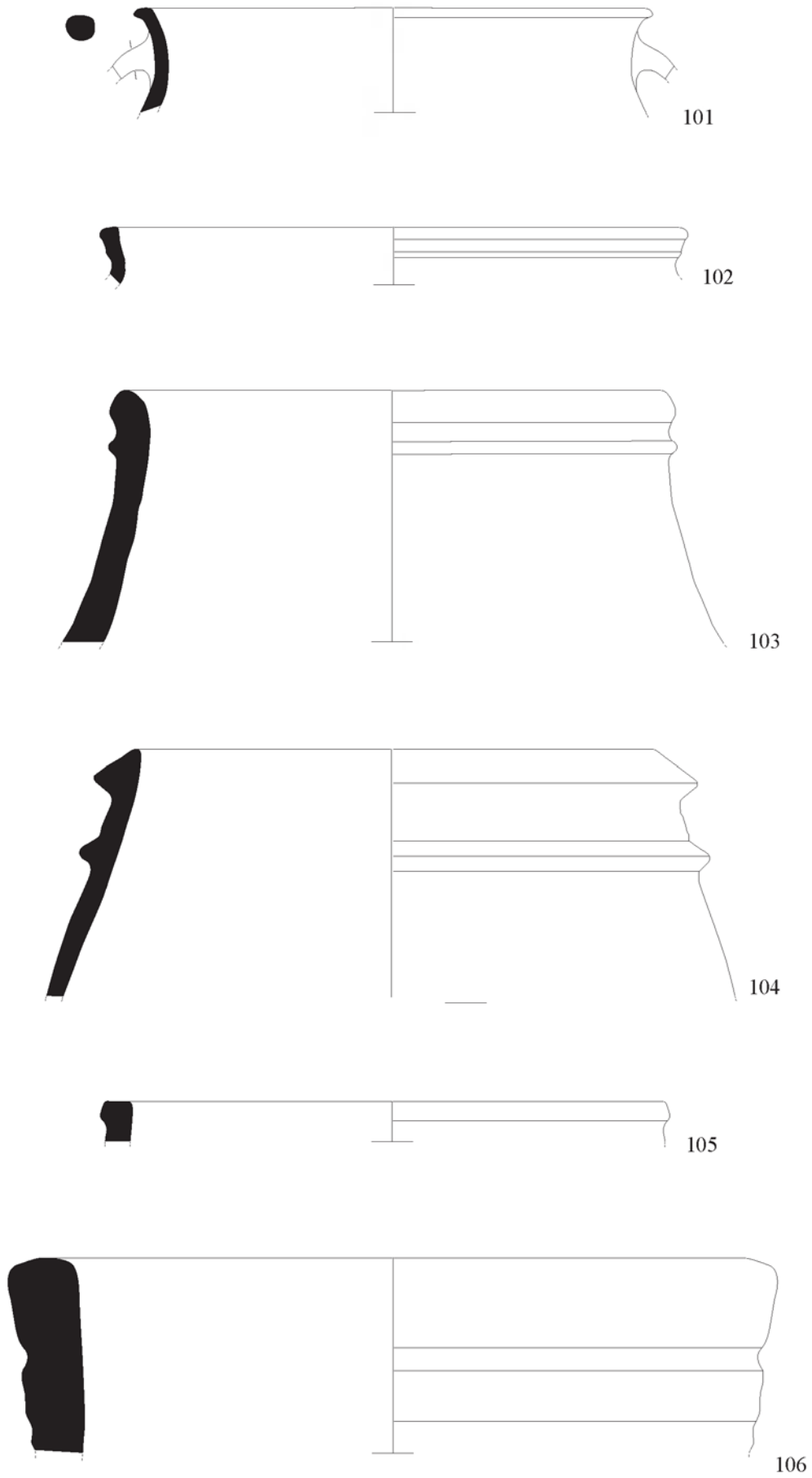


Figure 7.38 - Common Ware. Storage jars and pithoi

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
107	Tr12	9		M/O	2.5YR 5/8	7.5YR 6/4	5YR 6/6
108	Tr3	Surf.		M/O	7.5YR 7/6	7.5YR 6/6	7.5YR 6/6
109	T23a			M/O	10YR 8/3	10YR 8/3	10YR 8/3
110	T23a			M/O	10YR 8/3	2.5Y 8/3	2.5Y 8/3
111	T9			M	2.5Y 8/4	10YR 8/6	10YR 7/6
112	Tr12	9		M/O	10YR 8/3	10YR 8/3	10YR 8/3
113	Tr12	9		M/O	10YR 8/3	10YR 8/3	10YR 8/3
114	T9			M/O	10YR 7/4	10YR 7/4	10YR 7/4
115	Tr12	10		M/O	5YR 6/6	5YR 6/6	5YR 6/6
116	T9			M/O	2.5Y 8/4	10YR 8/6	10YR 7/6
117	Tr1	6		M/O	Dark core	2.5YR 6/8	5YR 6/8
118	Tr8	12		M/O	2.5Y 8/4	2.5Y 8/3	2.5Y 7/4

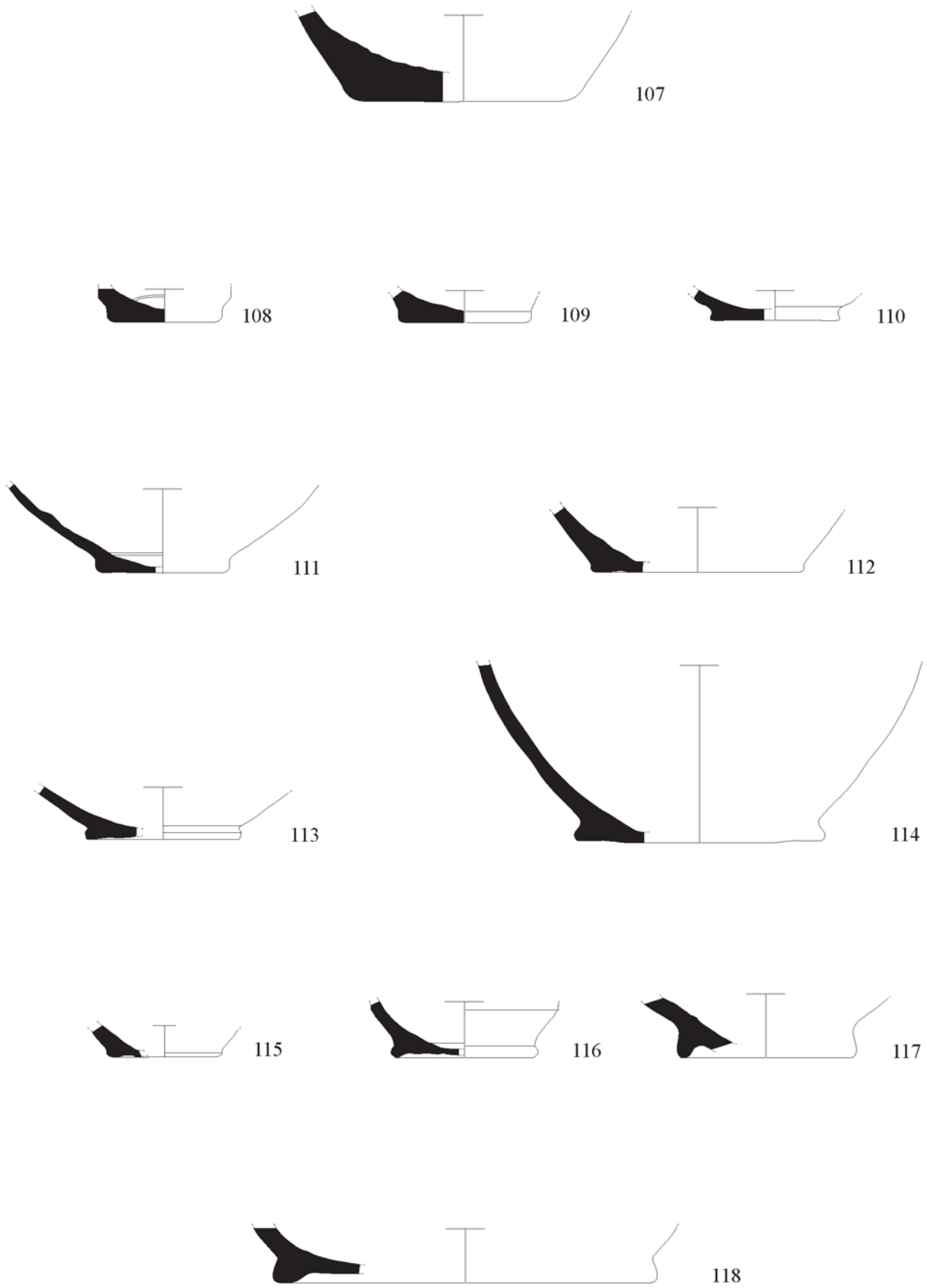


Figure 7.39 - Common Ware. Bases

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
119	Tr10	17		M/O	Dark core	5YR 4/4	5YR 5/6
120	Tr10	17		M/O	Dark core	7.5YR 5/4	7.5YR 5/4
121	Tr8	17		M/O	Dark core	7.5YR 5/4	2.5YR 5/6
122	Tr12	5		M/O	Dark core	2.5YR 5/4	5YR 6/6
123	Tr12	5		M/O	Dark core	5YR 4/4	5YR 5/6
124	T23a			M/O	Dark core	5R 3/1	7.5YR 5/3

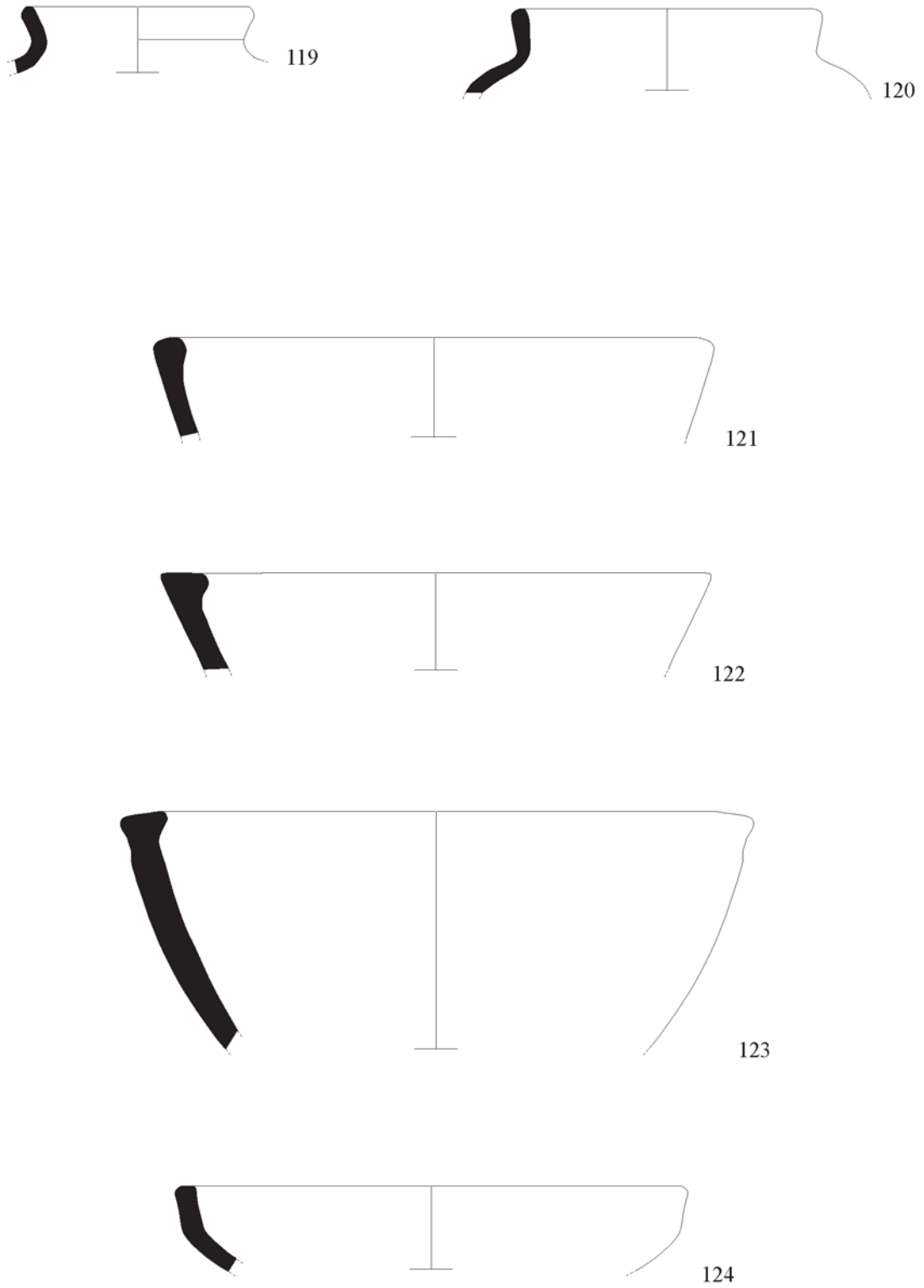


Figure 7.40 - Cooking Ware. Pots and pans

No.	Area Trench/ tomb	SU	inv. number	fabric	Fabric colour	surface ext.	surface int.
125	Tr2	1		M/O	5YR 6/8	5YR 6/6	5YR 6/6
126	T23a			M/O	10YR 7/3	Whitish- turquoise	Whitish- turquoise
127	Tr8	12		M/O	10YR 8/4	Yellow-greenish	Yellow-greenish
128	T24			M/O	Dark core	7.5YR 4/6	7.5YR 4/6
129	T23a	16		M/O	2.5YR 8/4	Light blue-green	Turquoise
130	Tr1	1		M/O	7.5YR 6/6	7.5YR 7/4	7.5YR 7/4
131	Tr10	17		M/O	10YR 7/2	10YR 7/3	10YR 7/3
132	Tr8	14		M/O	5YR 6/6	10YR 7/4	5YR 6/6
133	Tr9	19		M/O	5Y 8/3	Yellow	Yellow

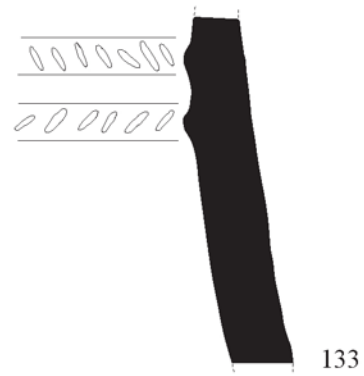
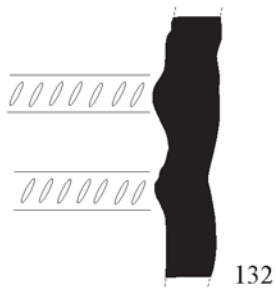
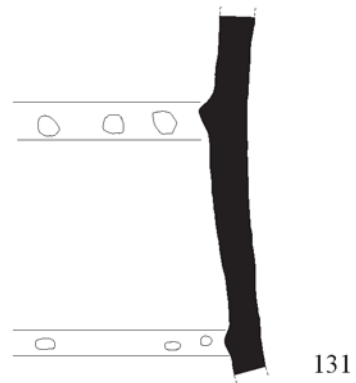
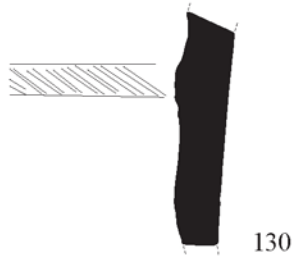
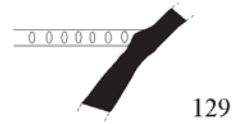
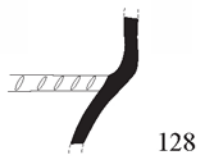
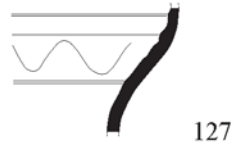
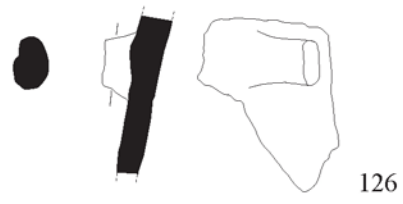
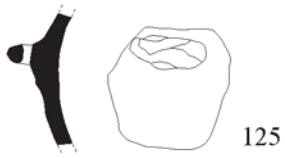


Figure 7.41 - Glazed Ware and Common Ware. Handles and decorations

Chapter 8

Archaeometric Investigation on Pottery of Kal-e Chendar

Patrizia Davit, Francesca Turco, Alessandro Borghi

8.1 Introduction

The aims of the archaeometric analysis are to obtain data on the ware composition and on the technology of production. The obtained results would help to better understand the archaeological context of the site and the culture of the people once frequenting the complex of Kal-e Chendar.

The investigation on the selected samples involved the petrographic characterization of the non-plastic inclusions and the determination of the average chemical composition of both the clay matrix (by scanning areas without inclusions or pores)¹ and the whole body by means of Scanning Electron Microscopy coupled with Energy-Dispersive X-ray (SEM-EDX) analyses. Moreover, the evaluation of the mineralogical phases was carried out by X-Ray Powder Diffractometry (XRPD).

The analyses on the non-plastic inclusions and on the matrices were performed by distinguishing the two components based on their grain size: inclusions represent the fraction of mineral and rock fragments coarser than 15 μm , while the matrix is composed by particles finer than 15 μm .² The petrographic analysis of the inclusions has the aim to reveal the presence of diagnostic minerals and rock fragments, which would suggest procurement of raw materials from different sources, eventually allowing to identify different production sites. Moreover, it gives insights on the kind of temper used in the manufacturing of the ceramic classes, allowing to reconstruct their technology of production,³ while the matrix chemical analyses would help in the classification of the ceramic set. On the other hand, the SEM-EDX investigation also provides crucial information on the manufacturing processes, through the morphological and compositional characterization of the surface finishing layers (glazes and vitrified clayey slips). Finally, the XRPD results allow an estimation of the firing conditions, with particular reference to the evaluation of the maximum firing temperature reached by the ceramic materials during the original firing.

8.2 Materials and methods

The analytical samples for the SEM-EDS analyses were cut from the archaeological fragments with the aid of a diamond disk and encompassed in an acrylic resin. The impregnated sections were subjected to abrasive treatments on silicon carbide papers with a 500 and 1000 grit size and subsequently to a polishing step with a 1 μm diamond paste on special clothes.

The polished sections were then mounted on aluminium stubs using carbon tape and they were covered with a carbon coating by using a coating unit (SCD 050 Sputter Coater, Bal Tec, Scotia, NY, USA). The morphological evaluation and the chemical composition determination were performed on the carbon-coated sections with a Cambridge S-360 SEM equipped with a X-Act3 SDD-EDS detector. The SEM-EDS calibration was performed using the polished and carbon-coated 53 Minerals Standard (Astimex Standards Ltd 72 Milicent Street Toronto, Ontario M6H 1W4 Canada) and quantitation was performed using Oxford Instruments XPP correction. The accelerating voltage was set at 15 kV, the probe current at 2 nA and the working distance at 10 mm.

¹ Tite et al. 1982.

² Damjanovic et al. 2014 and reference therein.

³ Erb-Satullo et al. 2011; Cubas et al. 2014.

The analyses on the ceramic paste were performed following two different procedures. The first procedure involved the scanning of at least four square or rectangular areas (of different dimensions, depending on the characteristics of the sample) on the ceramic body matrix at 400X magnification and by simultaneously acquiring spot spectra on all the mineral inclusions observed in the selected area. The second procedure consisted of scanning four whole areas (both matrix and mineral inclusions) for each sample at 50X magnification (approximately 1.35 mm²). The analyses on glazes and slips were performed by acquiring spot or small squared or rectangular raster spectra, depending on the morphology of the surface layers. Quantitation was performed on 10 elements, namely Na, Mg, Al, Si, P, S, K, Ca, Ti and Fe, and expressed as the wt% of the corresponding oxide, normalized to 100%. The detection limit (DL) was considered to be 0.2 wt%.

The mineralogical composition of the samples was also evaluated by OM investigation performed with a transmitted light polarized microscope (type Olympus BX41) coupled with a Jenoptick ProGres C5 digital camera, on the uncoated thin sections.

X-Ray Powder Diffraction (XRPD) patterns were collected using an Analytical X'Pert Pro (PANalytical B.V., Almelo, The Netherlands) equipped with an X'Celerator detector powder diffractometer using Cu K α radiation generated at 45 kV and 40 mA. The 2 θ range was from 5 to 90°. The analytical samples for the XRPD analyses were cut from the archaeological fragments with the aid of a diamond disk and manually ground in an agate mortar. The appropriate amount of ground sample was placed in a quartz sample holder and compressed with a glass slide. The X'Pert HighScore software was used for the evaluation of the diffraction patterns and the identification of the mineralogical phases.

Principal Component Analysis (PCA) and Agglomerative Hierarchical Cluster Analysis (HCA) were performed by the XLSTAT Addinsoft software, using Ward's method for building up dendrograms, after the autoscaling pre-processing procedure.

8.3 Results and discussion

8.3.1 Petrographic and mineralogical evaluation

EDX analyses of the inclusions revealed the presence of different minero-petrographic patterns, allowing a classification of the samples in 7 main groups with some sub-groups. Hereinafter a brief description of some of the samples for each group is depicted, while the minero-petrographic classification is illustrated in Table 1. Group 1 was further subdivided in group 1a and group 1b, based on the main petrographic features.

Group 1a - Granitic sands

The main features of this group are well represented by Sample 20C (Fig. 8.1, top left), which shows numerous Ca-rich oriented lamellar aggregates and large carbonate grains, round but angular quartz inclusions, with a quite uniform size around 20 μ m, homogeneously dispersed in the matrix and a small number of calcite inclusions and abundant k-feldspars with the same characteristics. Iron oxides, titanite, apatite, biotite, rutile, ilmenite and bioclasts were observed in lower amounts. The primary porosity is limited and more abundant in the layer next to the surface, which is also characterized by the almost complete absence of large inclusions. These overall features suggest that the raw materials derive from granitic sands. On the other hand, the few and large calcite inclusions were probably added as tempering materials.

Sample 12R shows similar characteristics, with a high amount of quartz and K-feldspar inclusions while other alkaline feldspars, ilmenite, biotite, plagioclase and titanite are present in lower abundance. The matrix of this sample is Ca-rich but calcite inclusions are exiguous in this case. Both rounded and elongated macropores are present, but the overall macroporosity is relatively low, while a high microporosity can be highlighted.

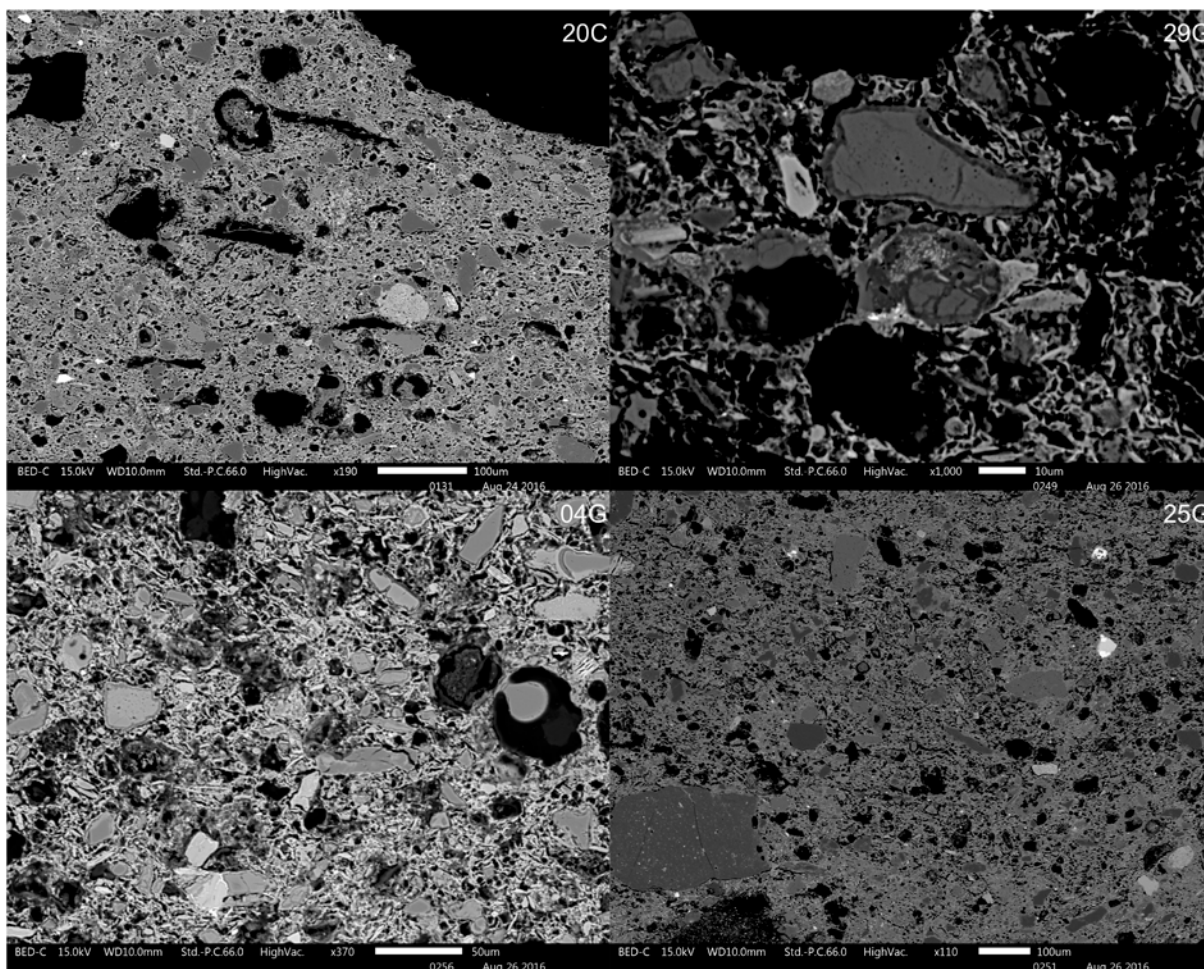


Figure 8.1 - SEM BS images of samples 20C (top, left), 29G (top, right), 04G (bottom, left), 25G (bottom right), at different magnifications

Group 1b - Granitic sands + high-T neoformation phase

Group 1b petrographic pattern is analogous to group 1a; in addition, a high-temperature Ca-containing phase and reaction rims in most of the clasts were observed.

Sample 29G (Fig. 8.1, top right) shows few round large inclusions (<100 µm) and is characterized by a Ca-rich matrix, fine grain size and limited porosity. The large inclusions are mainly quartz, plagioclase and neoformation Ca-rich phases, which are also abundant as finer grains (< 50 µm, with very homogenous dimensions). Titanite, albite, biotite, alkaline feldspar, white mica, diopside, iron oxides and ilmenite were also detected.

Sample 04G (Fig. 8.1, bottom left) exhibits a fine grain size distribution, very few large inclusions and a scarce porosity. A single large bioclast (about 2 mm) is observed in the paste, together with fine grain (< 50 µm) round sandy inclusions. Other inclusions consisted in quartz, epidote, plagioclase, K-feldspar, mica, barite, ilmenite, biotite, apatite and iron oxides. Reaction rims are frequently present. Calcite is absent as inclusions but the matrix is Ca-rich.

Sample 25G (Fig. 8.1, bottom right) shows a high and heterogeneous porosity and the presence of numerous large (up to 1 mm) angular quartz grains. The finer grain size fraction is mostly round and mainly constituted by K-feldspar, quartz, muscovite and the new formation Ca-rich phase, while biotite, rutile, apatite and plagioclase are less abundant and calcite is almost absent. The grain size distribution is extremely heterogeneous and the very scarce matrix is Ca-rich. The presence of augite must be pointed out.

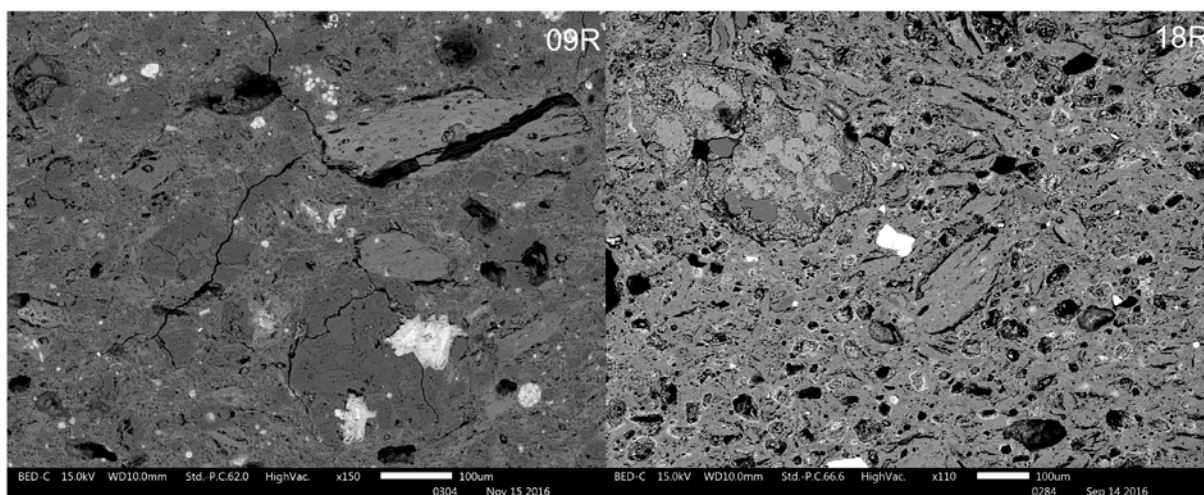


Figure 8.2 - SEM BS images of samples 09R (left) and 18R (right) at different magnifications

Sample 06G was assigned to this petrographic group but exhibits slightly different features from the other samples. Its grain size distribution is much more heterogeneous and coarse, suggesting a lower degree of refinement for a common raw material. Titanite, barite, a Cr-spinel and the neo-formation Ca-rich phases were observed as inclusions, together with peculiar glass grains and glassy rims around many quartz grains. The matrix is highly calcareous.

Group 2 - Low grade metamorphic

The samples belonging to this group (Fig. 8.2) are mainly characterized by a scarce presence of quartz and the total absence of carbonate inclusions and by a marked compositional homogeneity.

Sample 22R reveals the occurrence of numerous kaolin/pyrophyllite/phengitic mica lamellae at different transformation steps and frequent inclusions of a Fe-rich aluminosilicate (presumably chamosite), with mean dimensions ranging from 50 to 400 μm and homogeneously dispersed in the matrix.

The main matrix component and most of the finer clasts are pyrophyllite, while quartz and chlorite are more exiguous. These overall features suggest the use of a raw material with a composition comparable to a deposit of primary kaolin, characterized by a heterogeneous grain size distribution and used without specific refinement procedures.

Group 3 was further subdivided in group 3a (represented by a single sample, 14R) and group 3b (characterized by petrographic features intermediate between groups 1a/b and 3a), based on the main petrographic features.

Group 3a - Metamorphic (phengite)

Sample 14R (Fig. 8.3, top left) exhibits few large inclusions, while the other grains have a grain size lower than 50 μm . As for the inclusion petrographic composition, the most abundant phase is constituted by calcite and the matrix is Ca-rich. As for the other phases, albite, quartz and phengite grains are quite frequent, while iron oxides, biotite and white mica are scarce.

The sample reveals partially oriented voids and a 50 μm thick layer below the surface with different porosity but the same petrographic composition of the rest of the body. The overall features lead to hypothesize the use of a raw material of metamorphic origin (i.e. a phengite bearing mica schists).

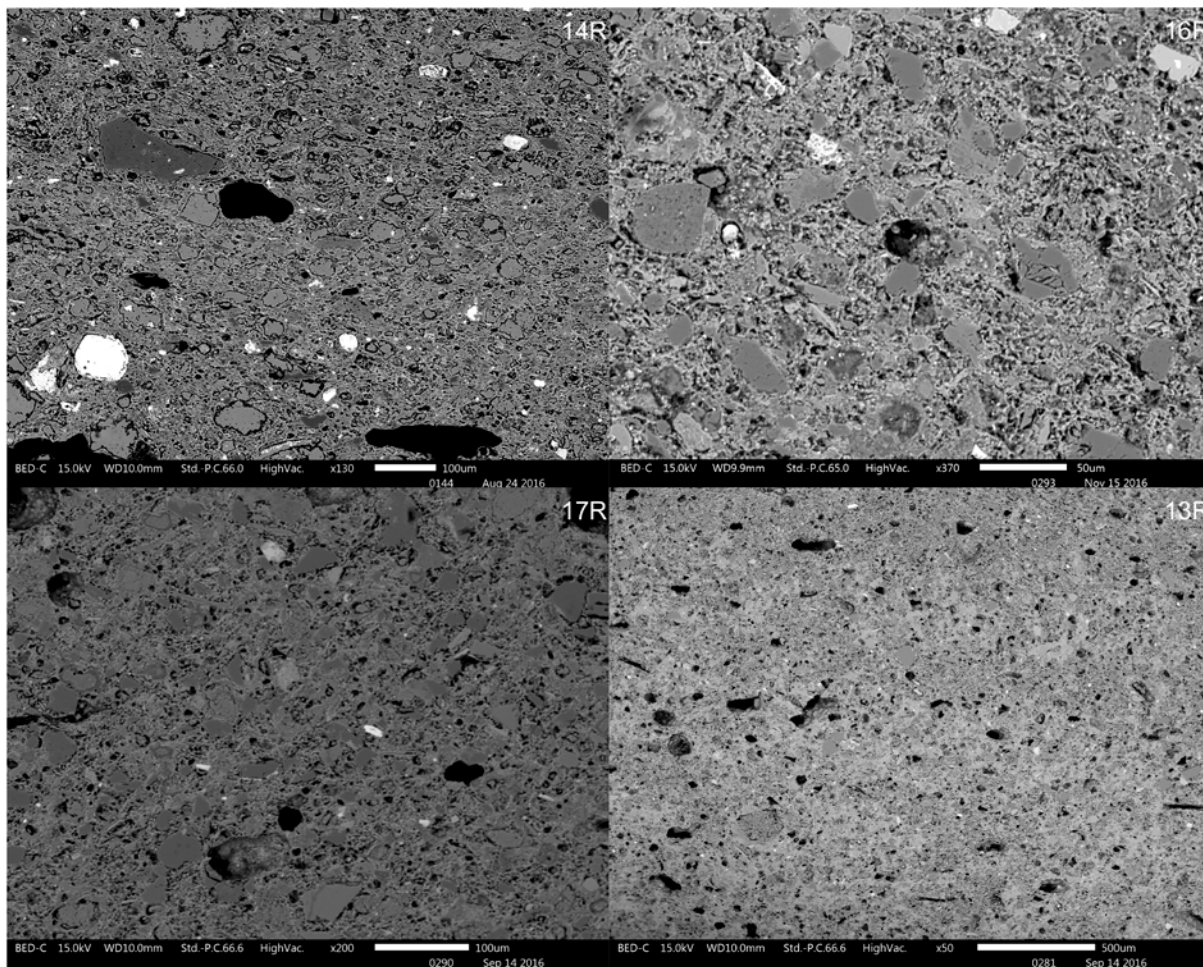


Figure 8.3 - SEM BS images of samples 14R (top left), 16R (top right), 17R (bottom left), 13R (bottom right), at different magnifications

Group 3b - Granitic + metamorphic sands

The inclusions of the samples classified in this petrographic group (Fig. 8.3 samples 16R top right, 17R bottom left, 13R bottom right) are mainly constituted by round shape quartz and feldspars with homogeneous grain size and no specific orientation of components and are characterized by the presence of phengitic mica. The voids exhibit a heterogeneous grain size with dimensions ranging from 10 to 100 µm and sub-spherical shape. This composition suggests a mixed origin of the original raw material, both granitic and metamorphic.

Group 4 - Mixed sands

Sample 03R (Fig. 8.4) exhibits a microporous and irregular marly matrix, the porosity is moderate and coarse and reaction rims are frequently present. As for the inclusion petrographic composition, the main phases are quartz, calcite and marly limestone, characterized by homogeneous and relatively small dimensions (around 50 µm) and round shapes. Large inclusions are completely absent and K-feldspar, apatite, titanite, chlorite, biotite, albite, iron and titanium oxides are present in low abundance.

Group 5 - Heterogeneous

Sample 21Ck exhibits broad pores and several heterogeneous and large inclusions. Fig. 8.5 (left) shows fossiliferous limestone fragments, with veins of pure calcite and presence of iron oxides containing small amounts of silicon and calcium. This suggests the provenance from a micritic limestone, whose

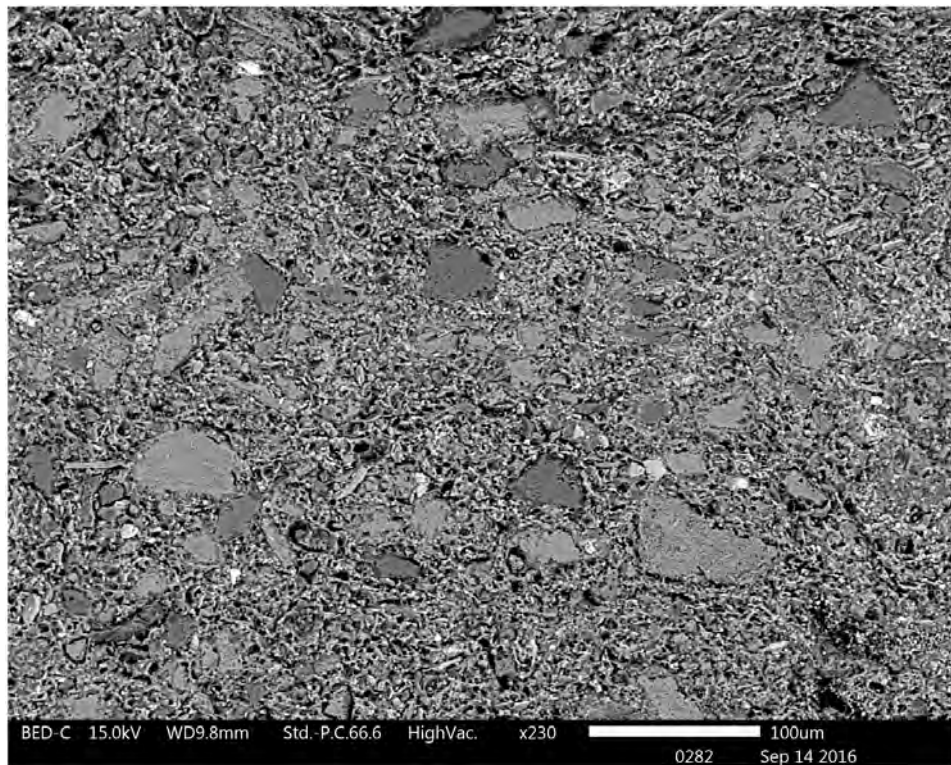


Figure 8.4 - SEM BS image of sample 03R at 230X magnification

origin is undoubtedly different from the temper observed in sample 20C, the other sample (classified in group 1a), which shows large calcite inclusions presumably added as tempering materials.

Fig. 8.5 (middle) illustrates a marl inclusion extremely rich in bioclasts.

The large composite fragment in Fig. 8.5 (right) contains a Fe-poor clay (almost kaolin in composition), muscovite, K-feldspar with a very low calcite content and it seems more compatible with the inclusions of sample 20C, highlighting sample 21Ck very coarse texture and very complex composition.

The most abundant phase in the finer (20-50 μm) grain size fraction are (in order of abundance) calcite, quartz, albite (not present in sample 20C), phyllosilicates, while chlorite and iron oxides are less frequent. With respect to sample 20C, the body matrix contains definitely less calcium, confirming the use of different original raw materials for the two samples.

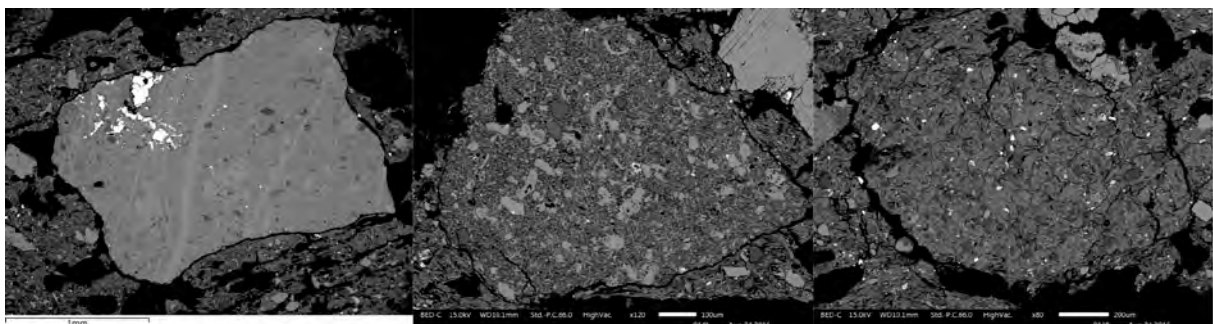


Figure 8.5 - SEM BS images of sample 21Ck at different magnifications

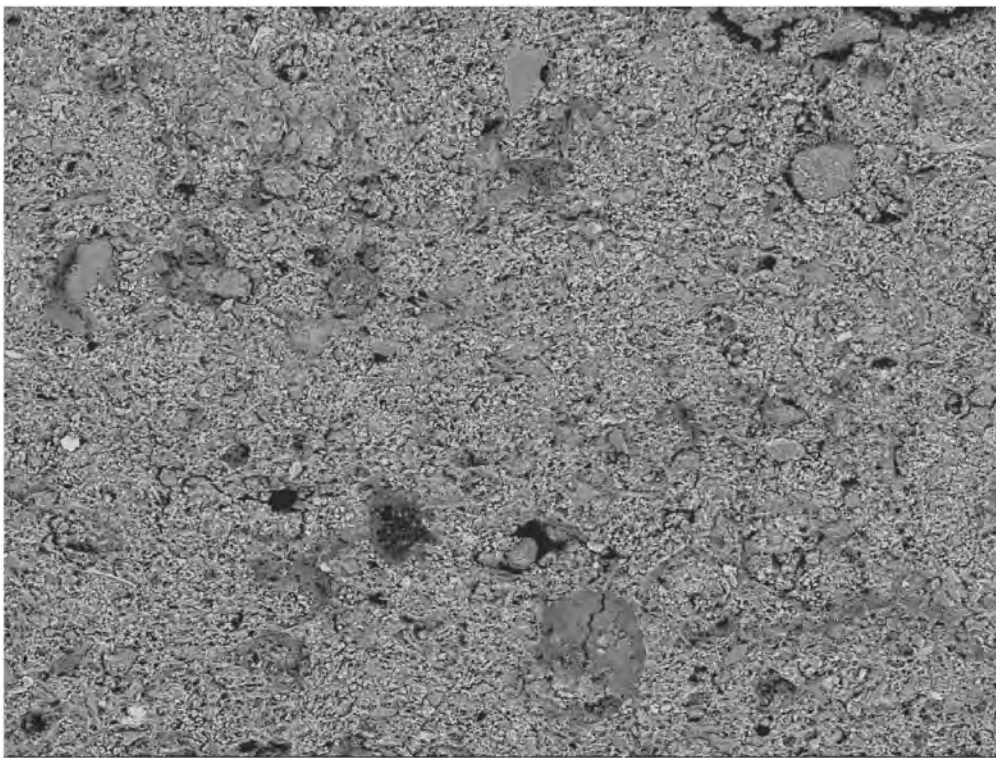


Figure 8.6 - SEM BS image of sample 30G

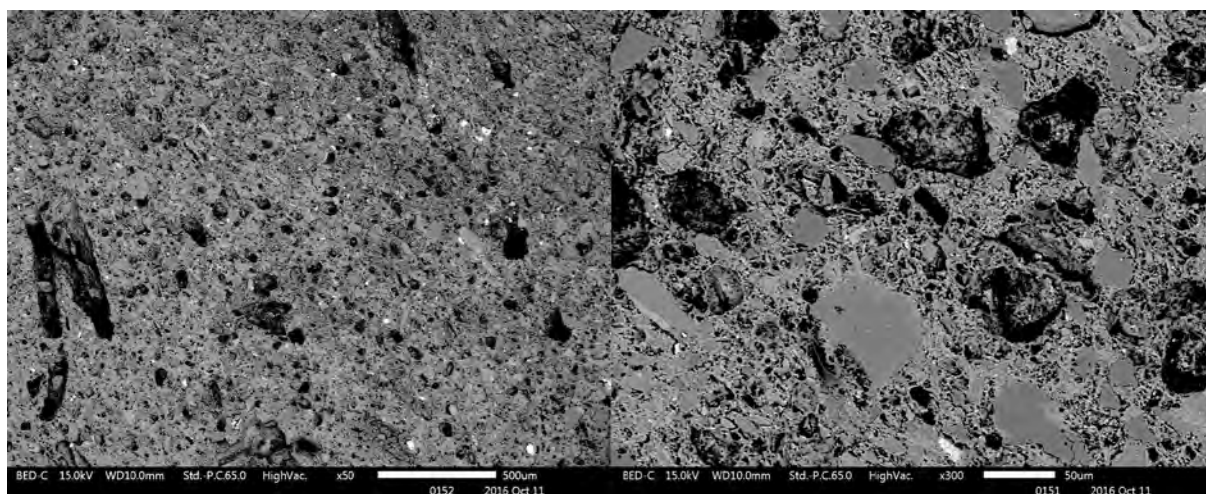


Figure 8.7 - SEM BS images of sample 26 G/C at different magnifications

Group 6 - Quartz

The samples belonging to this group exhibit the presence of a very limited amount of small inclusions (Fig. 8.6), mainly constituted by rounded quartz clasts (<50 µm), without reaction rims, and glassy grains.

Group 7

The inclusions (up to 100 µm) are abundant and homogeneous. Besides quartz, albite, biotite, mica, chlorite, iron oxides and pyroxenes, several clasts of a feldspar containing both Na and K (in a 1:2.5 ratio) were observed, which was not detected in the other groups, and few hornblende grains, suggesting a volcanic origin of the sediment.

Sample 28G reveals a microporous matrix with the presence of very elongated and oriented holes, suggesting the use of a potter's wheel during manufacturing. The detected minerals were quartz, albite, several clasts of Na- and K-rich feldspar, biotite, mica, chlorite, iron oxides and hornblende. Reaction rims were scarcely observed.

Sample 26G/C (Fig. 8.7) shows the presence of very abundant inclusions of quartz, biotite, the Na- and K-rich feldspar, pyroxene and anorthoclase. The texture is coarse, reaction rims are present and the matrix is microporous.

As can be evinced from the sample classification based on the petrographic examination illustrated in Table 1, group 2 includes only red slip ware, sample 14R is classified separately from all the other samples, the cooking ware (Ck) are grouped together (group 5) and groups 6 and 7 gather two petrographic different subgroups of glazed ware (G). On the other hand, the majority of the samples are classified under group 1, but while subgroup 1a include both common (C) and red slip ware, subgroups 1b exclusively consists of glazed ware. At last, group 4 contains both red slip and glazed pottery. As far as the provenance of the materials is concerned, no evidence of a local production (workshops, kilns, kiln wastes, etc.) was found until present, besides a local manufacturing is highly dubious due

Table 1. Minero-petrographic classification of the samples.

Samples	Minero-petrographic group and description
20C	1a. Granitic sands
23G	1a. Granitic sands
27G	1a. Granitic sands
12R	1a. Granitic sands
04G	1b. Granitic sands + high-T neoformation phase
06G	1b. Granitic sands + high-T neoformation phase
07G	1b. Granitic sands + high-T neoformation phase
11G	1b. Granitic sands + high-T neoformation phase
24G	1b. Granitic sands + high-T neoformation phase
25G	1b. Granitic sands + high-T neoformation phase (+ augite)
29G	1b. Granitic sands + high-T neoformation phase
09R	2. Low grade metamorphic
18R	2. Low grade metamorphic (pyrophyllite)
22R	2. Low grade metamorphic (pyrophyllite)
14R	3a. Metamorphic (phengite)
15G/C	3b. Granitic sands + metamorphic (phengite)
13R	3b. Granitic sands + metamorphic (phengite)
16R	3b. Granitic sands + metamorphic (phengite)
17R	3b. Granitic sands + metamorphic (phengite)
01G	4. Mixed sands (granitic + calcite)
08G	4. Mixed sands (granitic + calcite)
10G	4. Mixed sands (granitic + calcite) with volcanic component (7)
02R	4. Mixed sands
03R	4. Mixed sands (granitic + calcite)
19Ck	5. Heterogeneous
21Ck	5. Heterogeneous
05G	6. Quartz (+ fluxes)
30G	6. Quartz
26G/C	7. Volcanic
28G	7. Volcanic

Table 2. XRPD mineralogic composition of some selected samples. The analysis is to be considered only qualitative, but the mineralogical phases are listed in an approximate order of decreasing abundance. Parentheses indicate phases present in very small amounts.

Sample	Petrographic group	Detected phases	Petrographic evaluation
20C	1a	Quartz, Calcite, Diopside, Hematite	Numerous Ca-rich oriented lamellar aggregates and large calcite inclusions. Sandy inclusions mainly constituted by quartz and minor K-feldspar and calcite dispersed in a carbonate matrix. Small white mica-oriented flakes.
12R	1a	Quartz, Diopside, Calcite	Sporadic inclusions of plagioclase, biotite, rutile and accessory minerals typical of magmatic rocks as Fe oxides, titanite, apatite, tourmaline and ilmenite.
04G	1b	Quartz, Gehlenite, Diopside, (Hematite)	Analogous to group 1a, plus high temperature Ca-containing phases. Few large inclusions, mainly plagioclase and neof ormation Ca-rich phases, the same phases constituting the abundant finer grain clasts, together with quartz. Minor inclusions of titanite, albite, biotite, white mica, diopside, epidote, Fe oxides and ilmenite. Calcite clasts are absent, but the matrix is Ca-rich. Locally, large inclusions of microgranite and K-feldspar.
25G	1b	Quartz, Gehlenite, Diopside	Several lamellae of kaolin/pyrophyllite/phengitic mica. Numerous inclusions of a Fe-rich aluminosilicate (presumably chamosite). The finer grain size inclusions are mostly pyrophyllite, which also seems the main matrix component, less abundant quartz and chlorite.
29G	1b	Gehlenite, Fe-silicates	The most frequent phase is calcite. Quite abundant albite, quartz and phengite, sporadic Fe oxides and biotite. The matrix is rather Ca-rich.
22R	2	Quartz, Hematite, Anorthite	Absence of large inclusions. Finer grains are mainly quartz, calcite and marly limestone. K-feldspar, apatite, titanite, chlorite, biotite, albite, and Fe and Ti oxides are present in lower abundance. The body matrix is marly.
14R	3a	Calcite, Quartz, Hematite	Large fragments of pure calcite. Calcite as most abundant phase in the finer grain size fraction. Less frequent quartz, albite, phyllosilicates, chlorite and Fe oxides.
02R	4	Quartz, Calcite, Diopside, Hematite	Very limited amount of small rounded quartz clasts and possibly glassy clasts.
03R	4	Quartz, Calcite, Diopside, Hematite	
21Ck	5	Calcite, Quartz, Diopside, Hematite	
05G	6	Quartz, Fe-silicates, (Hematite)	
30G	6	Quartz, Fe-silicates, (Hematite)	

to the characteristics of the site. On the other hand, at the moment no hypotheses can be proposed on the specific provenance of the different groups and the comparison with analyses performed on sherds from documented production centres where the objects under study could come from (i.e. Susa or other Mesopotamian sites) is mandatory. However, the high local geological and petrographic variability of adjacent areas⁴ should be considered and might suggest that the different observed groups correspond to different provenance but on a relatively limited scale. More information on the sample composition and classification can be obtained by examining the chemical data and by combining the petrographic and chemical results (see below).

⁴ Erb-Satullo et al. 2011.

On the other hand, the mineralogical pattern allows gaining important information on the technology of production with particular reference to the original firing temperature and conditions. The results of the mineral composition of some selected samples obtained by XRPD are reported in Table 2, together with a brief summary of the petrographic features of the corresponding groups.

The XRPD pattern for the glazed ware reveals the presence of high-temperature neo-formation phases such as diopside and gehlenite, which suggest an original firing temperature above 800°C⁵ and/or Fe-containing silicates. Hematite, which is the phase responsible for the colour in the orange or red pastes, is absent or present in very small amounts but it is known that the formation of Fe-silicates during firing limits hematite formation by incorporating Fe in their framework at temperatures around 900–1000°C. As for the red slip ware, the contemporary presence of calcite, diopside and hematite in most of the examined samples lead to an original firing temperature evaluation in the range 700–850°C.⁶ In fact, calcite is still one of the most abundant phases and it decomposes reacting with clay minerals to form new Ca-silicates from 850°C and hematite, which begins to form at 700°C, is already present.

8.3.2 EDX chemical composition

The mean values with the corresponding standard deviations of the EDX chemical composition data for each petrographic group, obtained on the whole body (both matrix and inclusions) and expressed as oxide wt% are reported in Table 3.

Group 3a only sample shows the lower sodium content of 0.2 (Na₂O wt%) while the highest value for Na₂O is observed for group 1b (1.0 wt%). MgO (wt%) ranges from about 1 (groups 2, 3a and 6) to values higher than 3 (groups 1a, 1b, 3b and 4). The highest values for Al₂O₃ are shown by groups 2 (24.1 wt%) and 3a (18.8 wt%) while in all the remaining groups its content is quite homogeneous, ranging from 10.4 (Group 6) to 13.6 (Group 5). SiO₂ is below 50 wt% except for group 2 (55.8 wt%), 6 (50.2 wt%)

Table 3. Mean values and the corresponding standard deviations of the EDX chemical composition data for each petrographic group, obtained on the whole body (both matrix and inclusions) and expressed as oxide wt%

Bodies											
Petrographic group		Na₂O	MgO	Al₂O₃	SiO₂	P₂O₅	SO₃	K₂O	CaO	TiO₂	FeO
1a	Mean value	0.7	3.4	12.4	49.0	0.7	0.3	1.5	23.5	1.0	7.4
	SD	0.4	0.5	0.8	4.3	0.7	0.1	0.3	4.7	0.2	0.6
1b	Mean value	1.0	3.8	11.0	48.8	0.8	0.3	1.2	25.4	0.7	6.8
	SD	0.3	0.8	1.1	5.1	1.2	0.1	0.2	7.2	0.1	1.0
2	Mean value	n.d.	1.0	24.1	55.8	0.9	0.2	2.3	7.2	1.1	7.4
	SD	/	0.05	2.4	2.3	0.5	0.02	0.8	3.5	0.1	2.0
3a (sample 14R)		0.2	1.2	18.8	42.1	n.d.	0.5	1.8	28.0	1.0	6.4
3b	Mean value	0.7	3.4	11.8	46.8	0.5	0.5	1.6	27.9	0.8	6.0
	SD	0.2	0.4	0.4	2.1	0.2	0.02	0.2	2.4	0.2	0.7
4	Mean value	0.7	3.7	12.3	46.1	0.4	0.4	1.2	27.8	0.9	6.5
	SD	0.3	0.4	2.3	5.6	0.1	0.1	0.1	8.5	0.2	1.3
5	Mean value	0.4	2.9	13.6	46.5	0.2	n.d.	1.9	25.7	0.9	7.8
	SD	0.1	0.04	0.1	2.8	0.1	/	0.1	2.8	0.0	0.6
6	Mean value	0.2	0.9	10.4	50.2	13.2	0.4	1.0	9.9	1.4	12.1
	SD	0.02	0.05	1.0	0.2	1.8	0.2	0.2	3.6	0.1	3.1
7	Mean value	0.7	2.7	12.2	60.4	0.3	0.3	2.3	13.6	1.0	6.5
	SD	0.1	0.6	0.02	3.2	0.2	0.0	0.7	4.2	0.2	0.3

⁵ Grammatikakis et al. 2019.

⁶ De Bonis et al. 2017.

and 7 (60.4 wt%). Phosphorous (like sulphur) is below 1 (P₂O₅ wt%) for all the petrographic groups, except for the anomalous value observed for group 6 (13.6 P₂O₅ wt%), which is probably due to a post-depositional effect, and K₂O wt% is below 2 except for groups 2 and 7.

CaO content is decisively higher than 20 wt% for 6 out of the 9 groups (1a, 1b, 3a, 3b, 4 and 5), it falls below 10 wt% for groups 2 and 6 and it has an intermediate value of 13.6 (wt%) in group 7. A specific comment should be addressed to these Ca very significant values. In more detail, at this regard [Van As and Jacobs 2014] assert that clays from the Mesopotamic area (II millennium BC) are highly Ca-rich: “nineteen microprobe analyses have been executed with representative clay samples at the Kamerling Onnes Laboratory of Leiden University. An evaluation of the spectra confirms that the natural clays from the Mesopotamian Alluvial Plain are very homogeneous over a large area. All clay samples, for instance, are rich in calcium in a well-distributed form. This causes problems for the archaeologist interested in provenance studies, because it is difficult to determine the production location of pottery from two sites that are distant from one another, when the composition of the natural clay resources of both sites is roughly identical.”. Finally TiO₂ and FeO (wt%) values range from 0.7 (group 1b) to 1.4 (group 6) and from 6.0 (group 3b) to 12.1 (group 6), respectively.

The comparison between the mean compositional data of the whole bodies and of the only matrices (Table 4) does not show particularly significant variations for the samples belonging to the petrographic groups 1a, 4, 6 and 7.

On the other hand, groups 1b and 3b show considerable lower SiO₂ contents in the matrix with respect to the body, and a parallel higher CaO content, highlighting a particularly calcareous matrix for these two groups that, on the other hand, show very high CaO values also in the bodies' composition. A different situation is observed for groups 2 and 3a matrices, which reveal relevantly higher Al₂O₃ contents and corresponding FeO and CaO lower values with respect to the bodies, notwithstanding the samples are highly calcareous in one case (group 3a) and scarcely calcareous in the other (group 2). Finally, the petrographic group 5 samples show decisively higher Al₂O₃, SiO₂ and FeO contents in the

Table 4. Mean values and the corresponding standard deviations of the EDX chemical composition data for each petrographic group, obtained on the matrices and expressed as oxide wt%

Matrices											
Petrographic group		Na₂O	MgO	Al₂O₃	SiO₂	P₂O₅	SO₃	K₂O	CaO	TiO₂	FeO
1a	Mean value	0.8	3.9	13.5	46.3	0.6	0.2	1.5	24.7	1.1	7.5
	SD	0.4	0.5	0.9	4.9	0.6	0.0	1.1	5.4	0.2	0.6
1b	Mean value	0.7	4.2	11.1	43.7	1.2	0.4	0.7	30.5	0.7	7.1
	SD	0.3	1.8	1.8	8.3	1.9	0.2	0.4	11.9	0.2	1.4
2	Mean value	n.d.	1.0	27.7	57.2	0.6	0.2	3.4	3.1	1.1	5.6
	SD	/	0.3	2.3	2.8	0.8	0.2	2.5	0.5	0.1	1.6
3a (sample 14R)		0.2	1.5	22.2	44.9	n.d.	0.7	2.9	21.8	0.9	4.9
3b	Mean value	0.5	3.7	12.4	41.1	0.6	0.4	1.4	32.5	0.8	6.6
	SD	0.4	0.4	0.9	1.2	0.4	0.1	0.5	3.1	0.2	0.7
4	Mean value	0.5	3.8	13.5	43.7	0.4	0.3	0.9	28.9	0.9	6.9
	SD	0.3	0.8	2.8	6.6	0.2	0.1	0.3	10.9	0.2	1.5
5	Mean value	0.2	4.0	19.1	59.2	n.d.	n.d.	2.5	4.1	1.1	9.8
	SD	0.0	0.1	0.8	2.3	/	/	0.1	1.0	0.2	0.9
6	Mean value	n.d.	0.8	10.5	48.0	14.6	0.3	0.7	10.4	1.6	13.4
	SD	/	0.2	1.3	1.2	1.8	0.0	0.2	2.5	0.1	3.3
7	Mean value	0.2	2.0	13.5	63.8	0.5	0.3	2.0	12.0	1.1	4.8
	SD	0.3	1.1	0.1	0.6	0.3	0.1	0.4	1.5	0.1	0.6

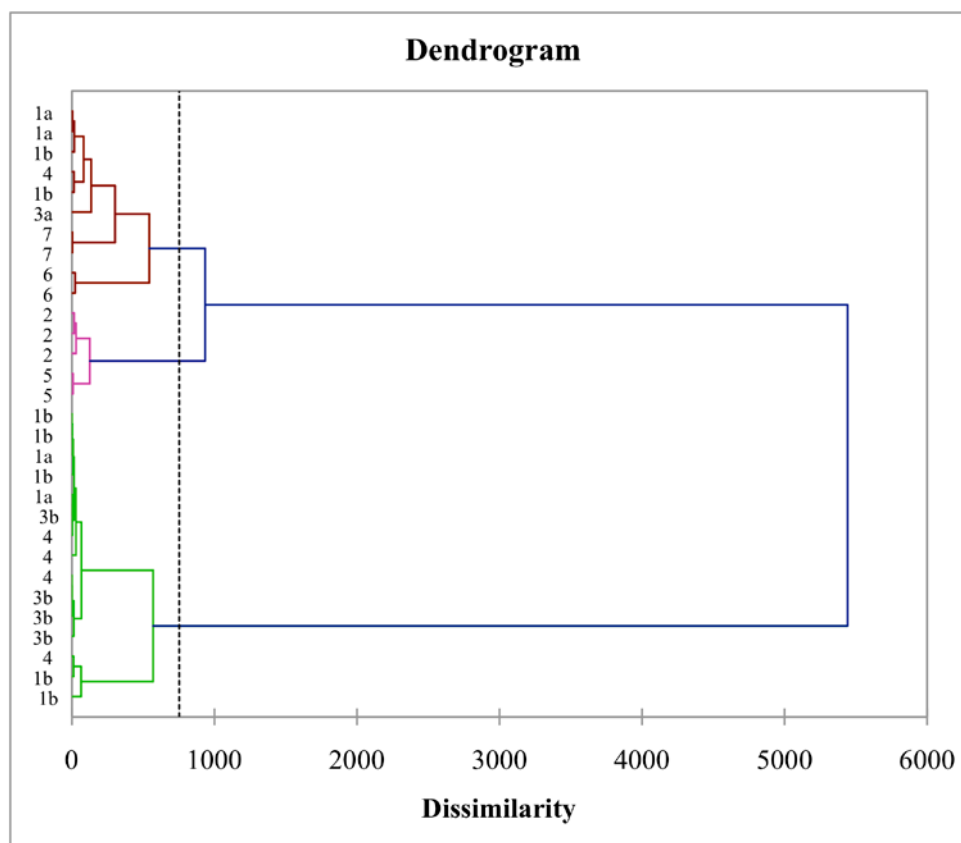


Figure 8.8 - HCA diagrams obtained from the whole body (matrix plus inclusions) EDX chemical composition data

matrices but a simultaneous severe decrease in the CaO data (from 25.7 to 4.1 wt%), suggesting that in this case the Ca contribution is mainly due to the presence of a high amount of calcareous inclusions.

The HCA performed on the bodies' composition (Fig. 8.8) highlights the presence of two main groupings. One of the classes groups 15 samples, belonging to the petrographic groups 1a (2 samples), 1b (5 samples), 3b (4 samples) and 4 (4 samples), while the other group contains two subclasses. One of the two subclasses gathers the two petrographic groups 2 and 5, while the other collects the remaining samples from groups 1a (2 samples), 1b (2 samples) and 4 (1 samples) and group 3a only sample, together with the two petrographic groups 6 and 7.

The PCA (Fig. 8.9) confirms this classification. The samples belonging to the petrographic groups 1a, 1b, 3a, 3b and 4 are distributed along the first principal component axis (F1) and are classified in two subgroups congruent to the HCA classification and corresponding to F1 positive and negative values, respectively. The samples belonging to the petrographic groups 2, 5, 6 and 7 are separated from these two subgroups and they form different subclasses positioned in the second (group 6) and third (groups 2, 5 and 7) quadrants. The loadings' distribution highlights that the subgroups containing samples from groups 1a, 1b, 3a, 3b and 4 are distinct based on the relative SiO_2 , Al_2O_3 , K_2O (lower for the larger subgroup and higher for the smaller one) and Na_2O , CaO , MgO (higher for the larger subgroup and lower for the smaller one) contents. Therefore the classification mainly divides the highly calcareous objects from the less calcareous ones. High SiO_2 , Al_2O_3 e K_2O contents also characterize the petrographic groups 2, 5 and 7, while group 6 differs for the FeO and TiO_2 relevant amounts.

To evaluate specific correlations between the analysed elements, bivariate diagrams were obtained. The FeO vs Al_2O_3 bivariate diagram illustrates the same sample distribution for both bodies' and matrices' compositions. Most of the samples group together, except for the petrographic groups 2, 3a and 6, which move away from the rest of the samples. By removing these samples, a more compact

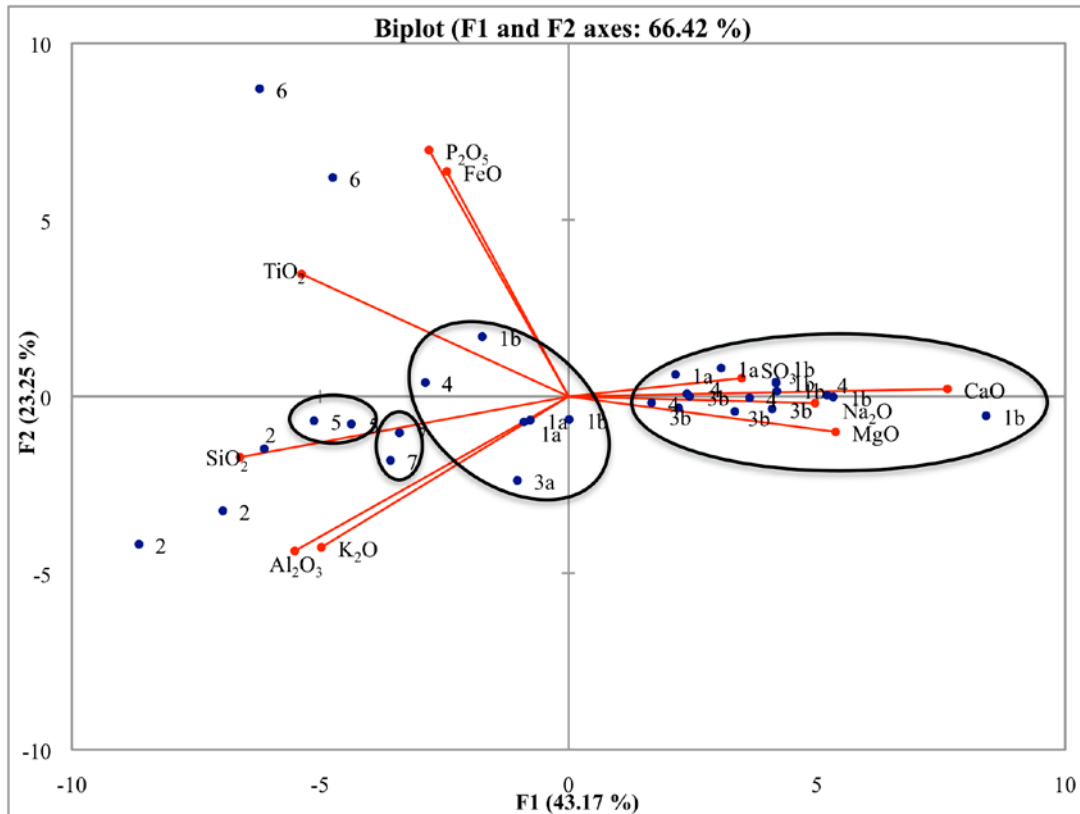


Figure 8.9 - PCA diagram obtained from the whole body (matrix plus inclusions) EDX chemical composition data

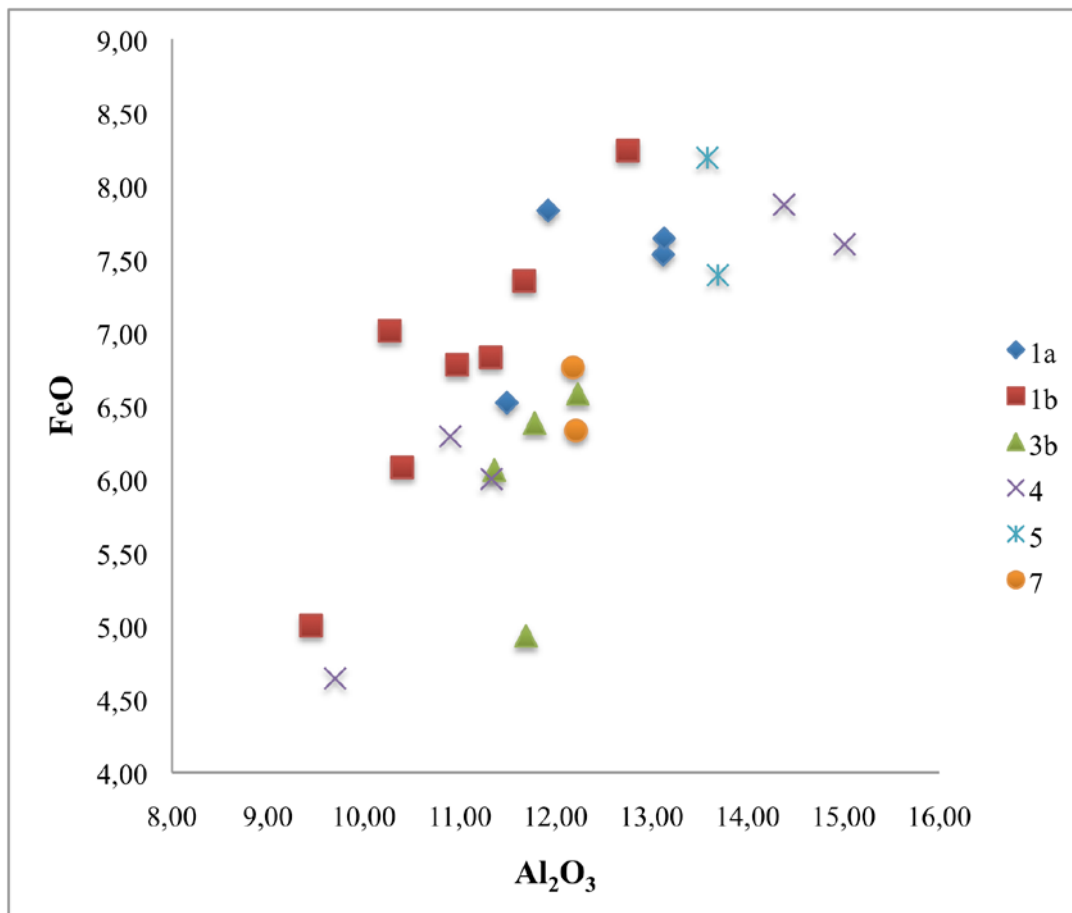


Figure 8.10 - FeO vs Al_2O_3 bivariate diagram obtained on the bodies' EDX chemical composition after the elimination of the petrographic group 2, 3a and 6 samples

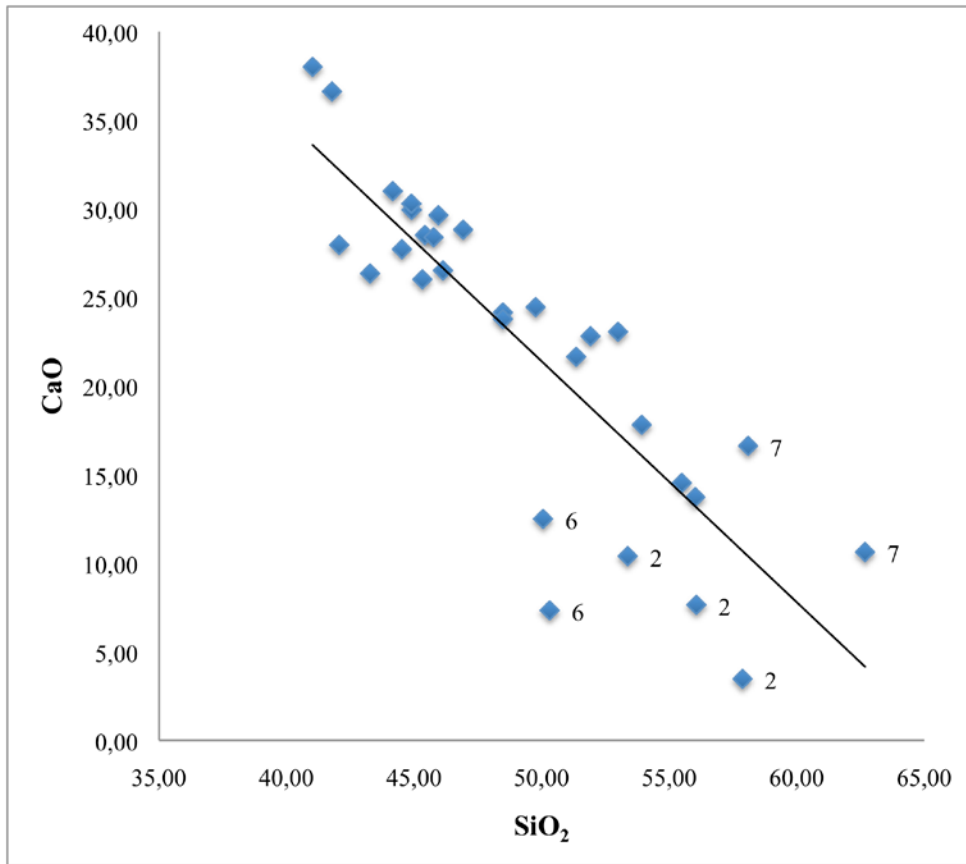


Figure 8.11 - CaO vs SiO₂ bivariate diagram obtained on the bodies' EDX chemical composition

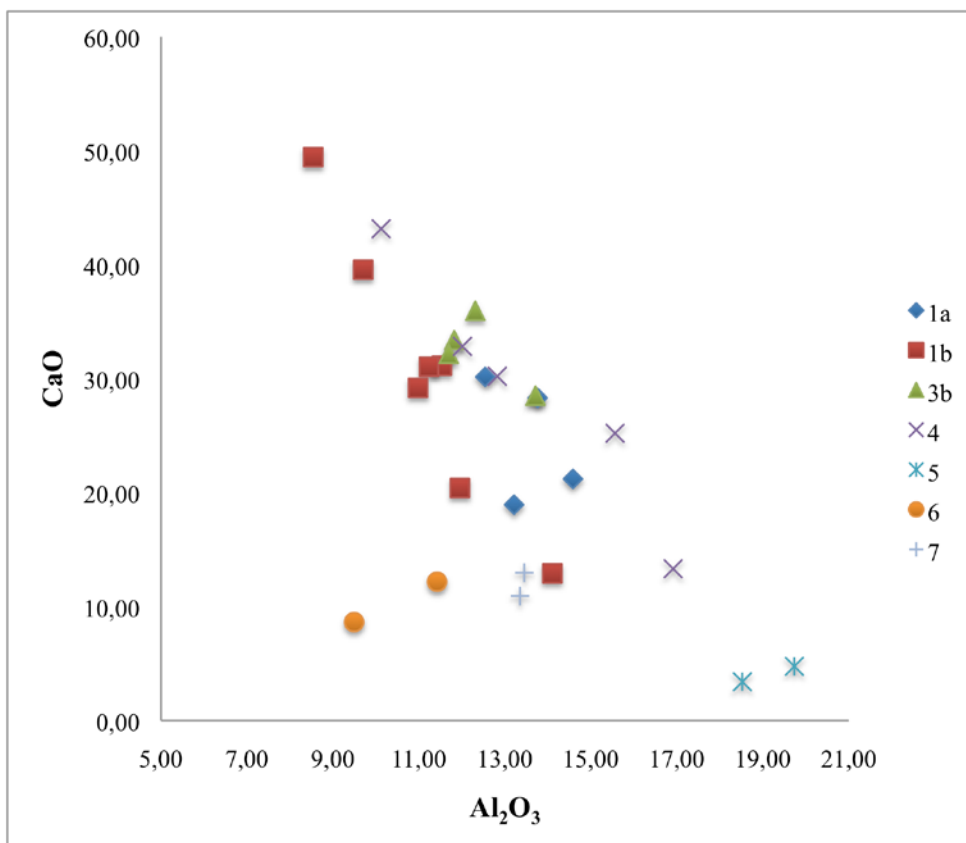


Figure 8.12 - CaO vs Al₂O₃ bivariate diagram obtained on the bodies' EDX chemical composition after the elimination of the petrographic group 2 and 3a samples

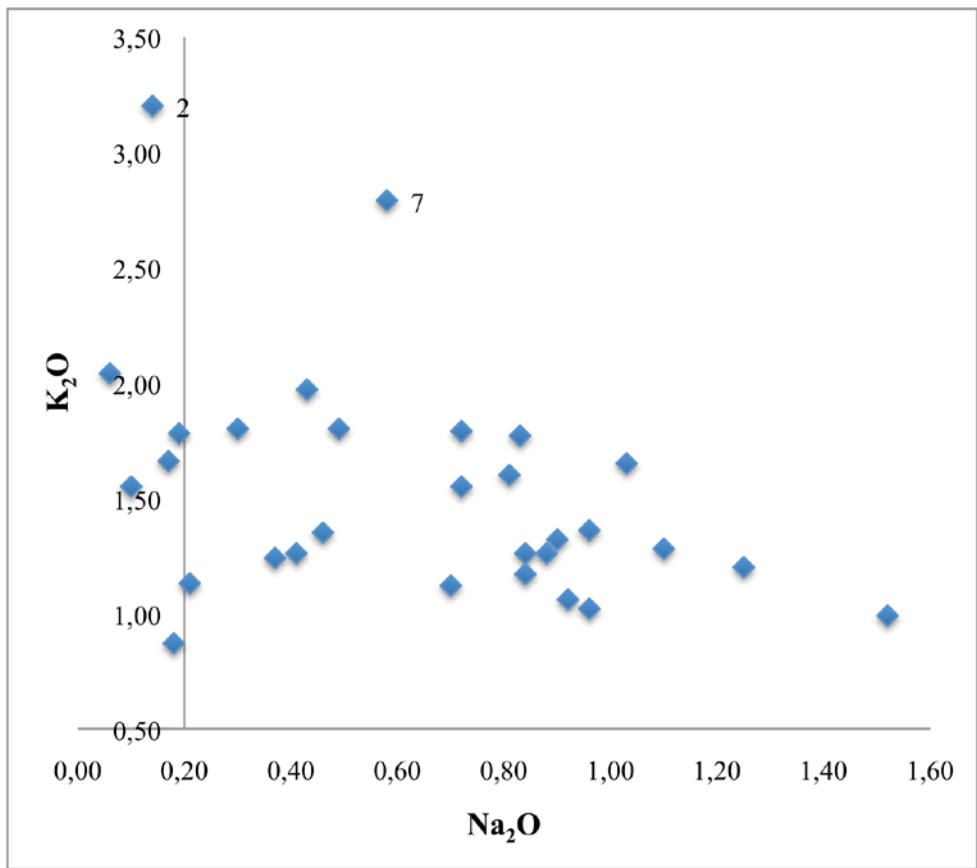


Figure 8.13 - K₂O vs Na₂O bivariate diagram obtained on the bodies' EDX

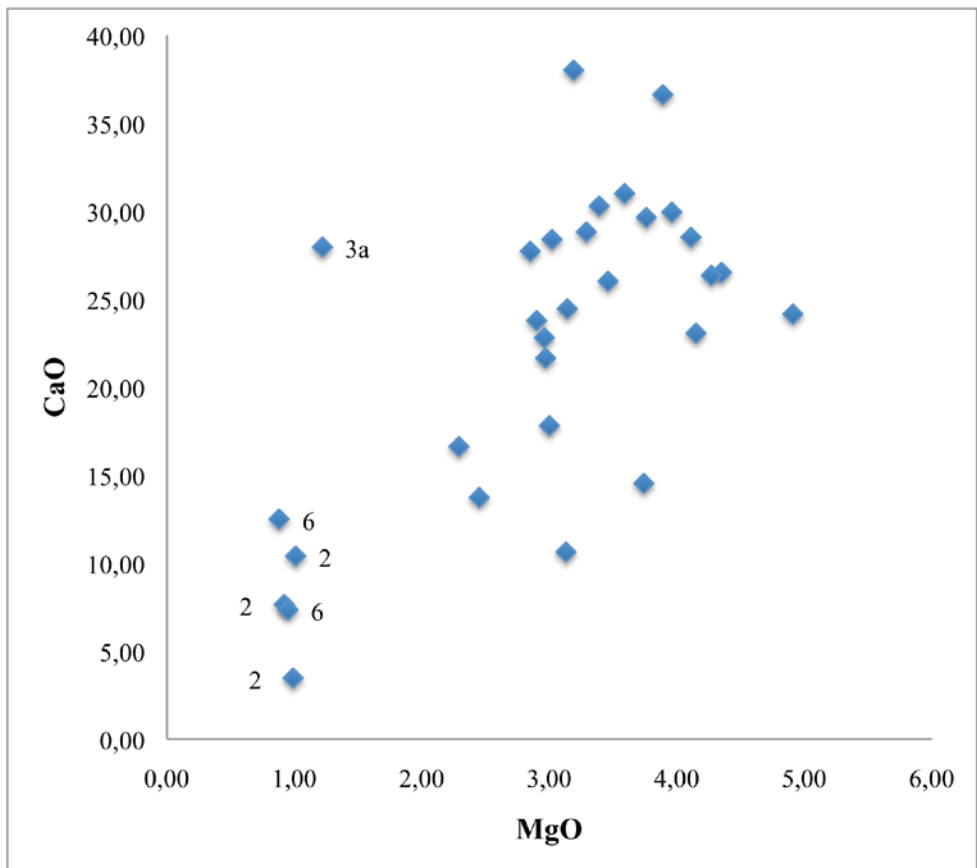


Figure 8.14 - CaO vs MgO bivariate diagram obtained on the bodies' EDX chemical composition

distribution is observed in the bodies' diagram (while in the matrices' diagram – not shown – the samples are more scattered), the remaining petrographic groups (1a, 1b, 3b, 4, 5 e 7) interpenetrate and they arrange along a positive slope line, suggesting a direct proportionality between the two elements (Fig. 8.10).

The CaO vs SiO₂ plots highlight the inverse proportionality of the two elements for both bodies and matrices, as expected, and underline the high variability in the Ca content, which ranges from 3.46 to 38.00 wt% CaO in the bodies and from 2.61 to 49.44 wt% CaO in the matrices. In the bodies' diagram a certain separation of the groups 2, 6 and 7 from the rest of the samples can be observed (Fig. 8.11).

The CaO vs Al₂O₃ graphs show a rather compact distribution of the samples, especially for the bodies, with the exception of the petrographic groups 2 and 3a. The removal of these groups lead to a sample distribution along a negative slope axis (except for the group 6 samples, which partially deviate from the rest of the sherds) particularly evident for the matrices' content (Fig. 8.12). This trend was predictable based on the direct proportionality between Fe and Al and the inverse correlation between Ca and Si. A similar situation is observed in the FeO vs CaO diagrams, which highlight an inverse proportionality between the two elements, after the elimination of the outliers (not shown).

Both the K₂O vs Na₂O bodies' and matrices' plots highlight the relevant K₂O content of sample 22R (group 2, whose Na₂O content was below the DL), which move it away from the rest of the sample, together with one of the two group 7 samples, but only in the bodies' graph (Fig. 8.13). The rest of the samples show a rather high variability in the Na content, even if in a relatively limited range (from 0.2 to 1.5 wt% Na₂O) in a K₂O content interval that fluctuates between 0.2 and 2.0 wt%.

The CaO vs MgO bodies' diagram (Fig. 8.14) reveals that the petrographic groups 2, 3a and 6 isolate from the rest of the samples while only sample 25G (group 1b) is partially separated in the matrices' plot (not shown). By eliminating the outliers, a scarce correlation is observed between these two variables for the remaining samples (diagrams not shown). A similar situation is observed for the relation between FeO and MgO (diagrams not shown).

As a general consideration, as already observed after the chemometric treatment, in addition to the confirmation of the peculiarity of some of the objects (groups 2, 3a, 5, 6 and 7) also from a chemical point of view, in the two large classes including the samples from groups 1a, 1b, 3b and 4 a compositional variability over quite wide ranges can be pointed out for most of the analysed elements. Since these groups include common, glazed and red slip ware, this variability would suggest a rather common source of raw materials for these classes even if on a quite wide temporal and/or geographic scale, while different provenances could be hypothesized for the other petrographic groups.

On the other hand, due to the high geological variability of the region, this might not imply highly significant distances between the production sites. In fact, as stated by Erb Satullo about Nuzi ware:⁷ “The geological variation in Mesopotamia and the northern Levant necessarily limits the analytical resolution with which we can approach the problem [...]. The identification of ‘local’ production can only be as specific as the size of the smallest geologically distinct region.

Archaeologists conducting ethnographic analysis of contemporary pottery suggest that most potters do not travel more than 7 km for clay or temper.⁸ Given the nature of the geology in Mesopotamia, however, it is unlikely that we will be able to distinguish different production sites [...], despite the fact that these valleys are much larger than 14 km in diameter.”

8.3.3 Surface coatings

Almost all the coatings (both glazes and red slips) are macroscopically deteriorated, showing heterogeneous surfaces and preventing obtaining quantitative EDX chemical data in many cases.

⁷ Erb Satullo et al. 2011.

⁸ Arnold 1985, 49; 2005, 16-17.

Table 5. EDX chemical composition of the analysed glazes (*indicates the most macroscopically deteriorated surfaces) and red slips. Red slip composition is directly compared with the corresponding body chemical data

Petrographic group	Sample	Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	P ₂ O ₅	SO ₃	K ₂ O	CaO	TiO ₂	FeO	CuO
Glazed ware												
1b	24G	7.4	3.0	2.0	68.9	0.2	0.4	7.8	6.1	0.5	1.1	2.3
1b	29G	8.5	2.1	2.2	69.4	0.2	0.4	5.2	8.1	0.2	1.5	2.2
4	08G	8.1	2.8	1.6	71.8	n.d.	0.3	5.2	7.2	n.d.	1.0	1.7
6	30G	13.5	2.8	2.1	65.4	0.3	0.4	6.4	5.3	n.d.	0.9	2.5
1a	27G*	0.4	1.0	12.3	63.9	0.2	0.2	1.2	9.9	1.5	8.9	n.d.
1b	06G*	0.3	0.9	10.4	75.1	n.d.	0.2	n.d.	6.0	0.8	3.1	2.9
4 + 7	10G*	0.3	0.9	5.6	79.5	0.2	0.5	n.d.	6.0	0.4	2.3	3.5
7	28G*	0.3	1.3	7.8	80.1	0.2	0.3	1.3	5.3	0.4	3.0	n.d.
Red slip ware												
1a	12R - Slip	n.d.	4.0	7.6	29.7	2.0	1.9	1.4	48.5	0.4	4.4	0.2
	12R - Body	0.9	4.1	11.5	45.4	0.5	0.4	1.3	28.5	0.8	6.5	n.d.
2	09R - Slip	0.3	1.2	21.2	59.4	4.3	0.6	2.1	4.2	1.1	5.7	n.d.
	09R - Body	n.d.	1.0	24.0	57.9	1.5	0.2	2.0	3.5	1.0	9.1	n.d.
2	18R - Slip	0.2	1.4	32.4	49.4	0.3	0.2	1.9	2.0	1.4	10.8	n.d.
	18R - Body	n.d.	1.0	26.6	53.4	0.5	0.2	1.6	10.4	1.0	5.2	n.d.
2	22R - Slip	0.3	1.8	32.8	51.9	2.1	0.6	1.3	2.6	0.4	6.2	n.d.
	22R - Body	n.d.	0.9	21.7	56.1	0.6	0.2	3.2	7.6	1.2	7.9	0.3
3a	14R - Slip	0.4	1.2	29.3	55.6	0.3	0.2	1.9	3.4	1.3	6.4	n.d.
	14R - Body	0.2	1.2	18.8	42.1	n.d.	0.5	1.8	28.0	1.0	6.4	n.d.
3b	17R - Slip	0.5	4.8	11.5	41.9	0.7	0.3	n.d.	20.7	1.0	18.4	n.d.
	17R - Body	0.8	3.3	11.7	46.9	0.7	0.4	1.6	28.8	0.6	4.9	n.d.
3b	13R - Slip	1.8	1.6	29.7	47.3	0.4	n.d.	9.7	1.9	0.7	6.8	n.d.
	13R - Body	0.7	4.0	11.4	44.9	0.3	0.5	1.6	29.9	0.7	6.1	n.d.
4	02R - Slip	0.6	3.8	15.3	58.6	0.7	0.2	1.8	9.9	1.7	7.3	n.d.
	02R - Body	0.4	3.7	15.0	55.5	0.5	0.2	1.2	14.5	1.2	7.6	n.d.
4	03R - Slip	0.2	2.8	19.3	44.3	1.0	n.d.	0.8	25.7	0.7	5.0	n.d.
	03R - Body	0.4	4.3	14.4	43.3	0.6	0.4	1.3	26.3	1.1	7.9	n.d.

Moreover, in the case of the glazed ware, a bright patina⁹ can be observed on most of the glazes. The original colour, which was presumably a blue-turquoise shade for all the glazed objects, is no longer visible in few cases and also in the sherds where it is still observable, it is not evenly distributed on the surface, which shows a mottled aspect.

The semiquantitative data for both glazes and red slips are reported in Table 5.

The best-preserved glazes show relatively high Na₂O (from 7.4 to 13.5 wt%) and K₂O (from 5.2 to 7.8 wt%) contents and MgO values ranging from 2.1 to 3.0 wt%. These values lead to classify the glazes as High Magnesium Glass (HMG), which were typically obtained by using plant ashes as flux instead of Na-rich evaporitic mineral sources. The fact that Mg content is actually lower than expected for this class can find an explanation in the conservation state of the surfaces. Surface patinas or

⁹ Gulmini et al. 2009.

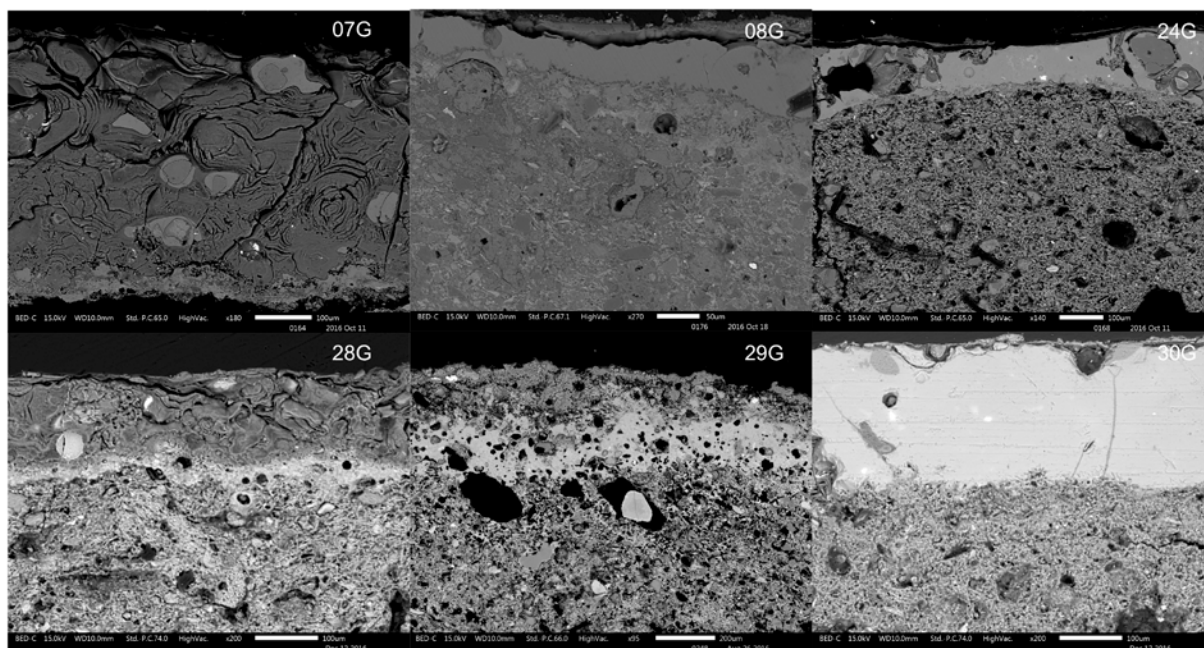


Figure 8.15 - SEM BS images (at different magnifications) of the surface layers of some of the glazed ware samples

alteration layers and/or areas in archaeological glass are known¹⁰ to have compositions that reveal a selective depletion (generally for alkaline and alkaline-earth elements) and a corresponding relative enrichment in specific element contents with respect to the original glass. Copper is the colouring agent in all the examined glazes, with a mean value around 2 wt% CuO.

As for the red slips, the comparison with the corresponding body composition reveals a heterogeneous and complex landscape. As a general consideration, a vitrified clayey slip usually shows higher contents of alkaline elements (Na and K) and iron (and lower Ca and Mg amounts), which act as fluxing agents by decreasing the sintering and vitrification temperature of the surface layer, with respect to the body paste. This allows the vitrification of the slip in a single firing step at a temperature at which the vitrification of the body does not occur. Different trends can be observed for the red slip ware under study, but the general tendency does not follow this rule. Many samples show a decrease in the Ca content, but this is not paralleled by a systematic increase in the Na, K and/or Fe amounts. Moreover, by comparing the compositional data with other red slip ware (i.e. Terra Sigillata¹¹ and Coral Red Slip on Greek Attic pottery¹²), the Al, Na, K and Fe contents are consistently lower and Ca and Mg generally higher. On the other hand, also in the case of the red slips, the conservation conditions of the surface layers are very poor, thus enrichment and depletion phenomena must be taken into account.

As far as the morphological characteristics are concerned, for the glazed ware the observed features of both the unaltered glazed areas and of the alteration layers are quite heterogeneous (Fig. 8.15), as well as the surface layer thickness, which ranges from less than 50 µm to around 400 µm in the different samples.

Some of the surfaces show compact glassy areas characterized by a regular and constant thickness in some sherds (e.g. 30G) and more uneven features in others (e.g. samples 08G and 24G). Some glazes reveal the presence of inclusions, air bubbles and/or cracks (e.g. sample 24G). Some samples (e.g. 07G) exhibit relatively small glassy areas embedded in an irregular lattice, with concentric laminar structures evolving from a central nucleus, assuming a cabbage shape. In other sherds a similar morphology is observed but the glassy areas are completely absent (e.g. sample 28G). Sample 29G

¹⁰ Gulmini et al. 2009 and reference therein; Domenech-Carbo et al. 2006.

¹¹ Mirti et al. 1999.

¹² Walton et al. 2009.

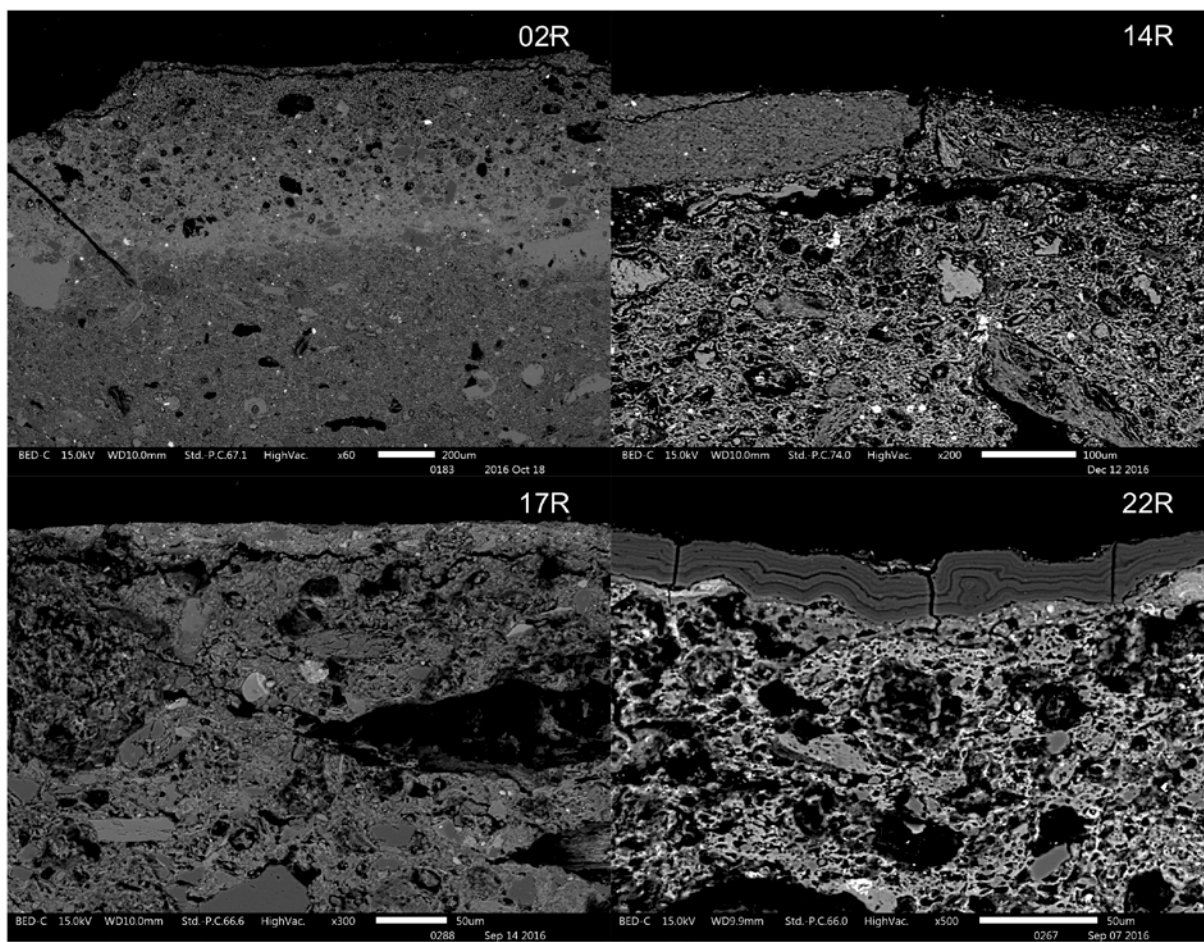


Figure 8.16 - SEM BS images (at different magnifications) of the surface layers of some of the red slip ware samples

glaze shows a quite irregular glassy layer with abundant bubbles and a surface alteration layer, darker in the BS image, characterized by low compactness and variable thickness.

The heterogeneity observed for the glaze layers is also confirmed for both the morphological features and the thickness of the red slips (Fig. 8.16). In this case, the layer thickness ranges from around 20-30 μm up to 600. Sample 02R slip shows a multi-layered structure, with an outer very thin layer detached from the surface underneath consisting of a thicker area characterized by a low sintering degree and a rather high porosity and an interface area above the body paste, which reveals a more compact structure, with a vitrified aspect and a lighter grey hue (in the BS image) with respect to the rest of the section, highlighting a higher mean atomic number in the elemental composition. Sample 14R image shows the joint area between a not sintered surface (on the right) and a sintered quite compact and homogeneous layer (on the left). Sample 17R reveals the presence of a rather thin surface layer, which is separated from the body paste by a crack; this surface layer does not show vitrification evidence, but it exhibits a higher sintering degree with respect to the body paste. At last, sample 22R slip reveals a peculiar aspect, with a highly vitrified aspect, a rather irregular thickness and separation surface between slip and body paste and a parallel stratification within the slip thickness.

The observed high heterogeneity in the morphological features of the different samples, both in the case of the glazed and red slip ware, seems to reflect the already evinced compositional variability and fits in the pattern of a more diffused production distributed on a large temporal and/or geographic scale together with the presence of smaller peculiar groups.

8.4 Conclusion

OM petrographic analyses performed on the selected samples brought to a classification of the sample set in 7 main petrographic groups and few subgroups, based on the presence of different mineralogical assemblages. EDX data subjected to chemometric treatment partially confirmed the petrographic classification, further highlighting a main chemical differentiation between Si-richer and Ca-richer samples. Moreover, the Si-richer sherds turned out to be all the more classified in several smaller clusters, suggesting different supply areas, while the Ca-richer cluster showed an overall lower chemical variability although it includes different petrographic groups, hinting either to the existence of workshops using raw materials from different sources with similar but not identical composition or to a natural variability (in temporal or spatial terms) of one or more clay outcrops. Based on the geological morphology (chapter 3) and soil composition (chapter 6.1-6.2), with almost no clay depositions, and on the absence of manufacturing facilities, pottery kilns or wastes, the most accredited hypothesis is that the found vessels were not produced at the site. On the other hand, at the moment no specific proof can be given on the provenance of the samples and the possibility to compare the results obtained in the present study with reference data on materials from possible coeval sites would be highly beneficial. Notwithstanding, the petrographic composition of the Ca-richer samples suggests that the raw material provenance could be related to the Khuzestan alluvial plain and more specifically to the area of the confluence of the Karun river and the other Tigris tributaries, originating from the Zagros mountains. Moreover, it must be pointed out that samples from three out of the four analysed ceramic class (glazed, red slip and common ware) are gathered in the Ca-richer cluster, even if a slight chemical distinction between the different classes within this cluster presumably suggests an intentional technological choice in function of the desired aesthetic objective. As far as the surface treatments are concerned, both glazes and red slips are poorly preserved and reveal typical alteration morphologies. The glazes were obtained by using plant ash fluxes (particularly K-rich) and copper as colouring agent while red slips were presumably produced with a low flux enrichment (both alkaline elements and iron) with respect to the body, which accounts for the scarce vitrification and the consequent deterioration.

Chapter 9

The Material Evidence at Kal-e Chendar: Small Finds, Metal and Glass Vessels, Sculptures and Coins

Ilaria Bucci, Alessandra Cellerino, Enrico Foietta

9.1 Introduction (I. Bucci)

The archaeological investigations at Kal-e Chendar brought to light assemblages of artefacts that help us shed more light on the chronology and cultural milieu of the site in antiquity.¹ In addition to pottery items and microliths, they include 84 objects featuring a wide variety of types, materials, and purposes (personal ornaments, vessels, tools, sculptural fragments, coins, etc.), retrieved from the excavation in Trenches 1 and 8 (Tr1 and Tr8) on the Upper Terrace, in Tr13 at the north limit of the North Terrace, and in many of the investigated burials (T7, T20, T23, T26, T27, T28; Gr2, Gr3) (Table 1). Some of the artefacts were also discovered on the surface of the fields during additional surveys at the site.

Due to the exploitation of the area of the Upper Terrace and the surrounding fields since the 1930s, resulting in more than eighty years of agriculture and farming that severely compromised the preservation of the archaeological deposit, only a limited number of items were unearthed in Tr1 and Tr8, while the majority were found in funerary contexts (Graph 1, Table 2). Tr13 was likewise poor of findings. The highest cluster of objects (37 out of 84, corresponding to the 44%) and pottery vessels come from T23, the largest and richest funerary chamber discovered so far.² Unfortunately, all of the tombs had already been looted before the archaeological investigations started in 2013, with the sole exception of a small cist grave (Gr2), that went unnoticed by the looters due to its location under the floor of a large funerary complex. In antiquity –as in modern times, sadly– grave robbers entered the tombs of Kal-e Chendar to take the objects reserved for the deceased.³ These activities not only inevitably hamper the calculation of the total amount of grave goods per burial, which we may assume much higher, but also leave us with very disturbed layers where human remains and fragmentary objects are often disorderly mixed together. The physical and chronological connections of the items to the burials, which is even more relevant in multiple tombs containing several individuals, is thus irremediably lost.⁴

The artefacts from Kal-e Chendar include objects that for their location in tombs may be interpreted as gifts for the dead or otherwise attributed a funerary meaning, as well as materials that could be linked to either religious or residential contexts.⁵ To ease the record keeping process and their first classification on the field, a main labelling system was adopted through our campaigns: with the exception of the complete or half-complete pottery vessels (P),⁶ the fragments that clearly belonged to stone statues (nos 75-76/SS01-02), and the coins (nos 81-84/C01-04), the findings received a SO ('small object') label and a progressive number.⁷ With regard to the small finds, the only items excluded from

¹ Baqherian et al. 2016; Bucci et al. 2017; 2018; Cellerino, Foietta 2020; see chapter 6.

² See chapter 11.

³ See Bucci et al. 2017, 17.

⁴ On the issues related to the study of pillaged burials, see for instance the dataset of de Jong 2017.

⁵ Very little remains of the buildings that once stood on the Upper Terrace, so much so that the original articulation and function of the complex are still unclear. Tr13: the discovery of a stone betyl or stand that probably belonged to the complex of Platform 1 seems to corroborate that funerary rituals were performed on this structure. See chapter 6.5.1.

⁶ See chapter 7.

⁷ 'Small objects' or 'small finds' is a convenient term used in archaeology to group together for the purpose of study disparate artefacts which do not fall in the major categories of findings, such as pottery and coins for instance, even though many of them may be far from small (Lloyd, Kenrick 2014, 98). The scholarly tendency in the past was to consider them as secondary, less valuable testimonies (often because of their poor state of preservation), with the result that they were largely neglected; however in recent years small finds have attracted more and more scholars interested in identity studies and ancient social practices (Hoss, Whitmore 2016; MacDonald 2016). The term is therefore

Table 1. Topographical distribution of the objects found at the site

Findspot	Objects
T7	no. 11/SO10, no. 13/SO09, no. 14/SO12, no. 18/SO11, no. 19 /SO15, no. 20/SO13, no. 21/SO14, no. 35/SO16, no. 58/SO04, no. 59/SO05, no. 60/SO06, no. 61/SO07
T20	no. 30/SO38, no. 32/SO56
T23	no. 1/SO57, no. 2/SO58, no. 3/SO59, no. 5/SO42, no. 6/SO60, no. 7/SO68, no. 8/SO69, no. 9/SO70, no. 15/SO40, no. 17/SO66, no. 22/SO41, no. 29/SO72, no. 33/SO67, no. 34/SO71, no. 37/SO65, no. 38/SO63, no. 39/SO55, no. 40/SO44, no. 41/SO45, no. 42/SO46, no. 44/SO61, no. 45/SO37, no. 47/SO43, no. 48/SO62, no. 51/SO39, no. 57/SO64, no. 62/SO01, no. 63/SO02, no. 65/SO08, no. 66/SO47, no. 67/SO48, no. 68/SO49, no. 69/SO50, no. 70/SO51, no. 71/SO52, no. 72/SO53, no. 73/SO54
T26	no. 24/SO90, no. 25/SO91, no. 43/SO85
T28	no. 4/SO81, no. 10/SO82, no. 50/SO80, no. 77/SO95, no. 84/C04
Courtyard T26 and T28	no. 80/SO94
T27	no. 12/SO88
Gr2	no. 49/SO79
Gr3	no. 16/SO89, no. 23/SO87, no. 26/SO86, no. 27/SO92, no. 28/SO93, no. 31/SO83, no. 36/SO84
Tr1	no. 46/SO97, no. 52/SO36, no. 55/SO99, no. 56/SO98, no. 74/SO100, no. 75/SS01
Tr8	no. 53/SO74, no. 54/SO75, no. 64/SO03
Tr13	no. 79/SO101
Surface	no. 76/SS02, no. 78/SO96, no. 81/C01, no. 82/C02, no. 83/C03

this chapter are those from microlithic industries (SO17-35/76-78), which are discussed in chapter 10, and the kiln triangle SO73, which is included in chapter 7. For the sake of clarity and to avoid tables of concordances, the original inventory numbers are maintained in the text and in the catalogue, where the items are organised by type and each entry is preceded by a progressive number (nos 1-84).

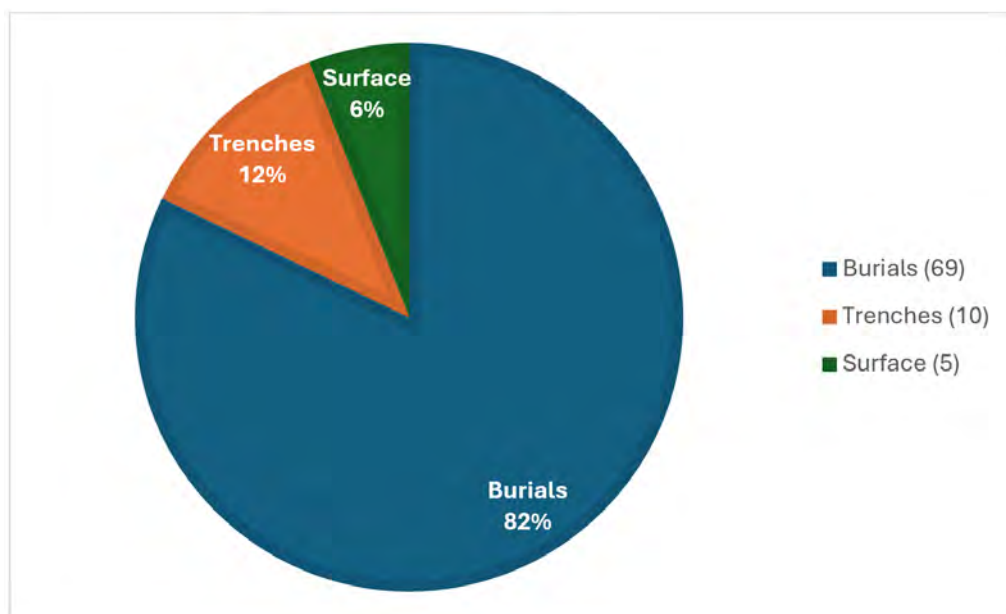
This study relies on the direct, naked-eye, examination of the artefacts by the members of the expedition on the field, and on the documentation (photographs, drawings, forms) they prepared; unfortunately, there was no chance for a further examination after the objects were delivered to the RICHT-ICAR. The artefacts were mechanically dry cleaned with brushes –water was used only for some stone objects– before being documented and then delivered. Metal items, in particular, were cleaned using a soft brush and a lancet to delicately remove soil and encrustations. No restorations were made and coins were the sole to undergo a consolidation process: they were washed with distilled water, soaked in ethanol and benzotriazole to inhibit corrosion and finally coated with a solution of acetone and acrylic resin (Paraloid B72) in order to protect the surfaces.⁸ With the exception of the petrographic and compositional investigations carried out on a selected sample of pottery,⁹ other archaeometric analyses, such as the metallurgical analyses that could have given more precise information about the composition and manufacturing techniques, were planned but couldn't be carried out due to the interruption of the fieldwork.

Following this brief introduction, the chapter will develop two main parts. The first (9.2) consists in the commentary sections, articulated in six main functional types: personal adornment (9.2.1), toiletries and furniture (9.2.2), vessels and tableware (9.2.3), utensils (9.2.4), sculptures (9.2.5), and coins (9.2.6). Each section aims at contextualising the artefacts from Kal-e Chendar studying the

widely adopted in the archaeological practice and publications, despite the fact that different teams or editors may use slightly different subcategories and nomenclature.

⁸ Bucci et al. 2018, 77.

⁹ See chapter 8 and also Davit et al. 2020.



Graph 1. Pie chart showing the percentage of objects per context

Table 2. Object types quantity and distribution

Object type	Burials	Trenches	Surface	Tot. number
<i>Diadem</i>	1			1
<i>Mouth Coverings</i>	3			3
<i>Gold Sheet Fragments</i>	6			6
<i>Beads and Pendants</i>	19			19
<i>Rings</i>	6			6
<i>Pin and Needle</i>	2			2
<i>Mirror</i>	1			1
<i>Spatula</i>	1			1
<i>Metal Appliques</i>	4			4
<i>Metal Vessels</i>	2	1		3
<i>Spoons</i>	2			2
<i>Glass Vessels</i>	2			2
<i>Stone Vessel</i>	1			1
<i>Pestles</i>		4		4
<i>Stone tool</i>		1		1
<i>Blades</i>	5			5
<i>Nails</i>	11	2		13
<i>Sculptural Fragments</i>		1	1	2
<i>Betyls</i>	1	1	1	3
<i>Censer</i>	1			1
<i>Coins</i>	1		3	4

categories to which they can be ascribed and the occurrence of similar items at the site itself and in other contexts, in order to better understand their chronology and function. To avoid a strict typology based on object material or shape that would have been less meaningful in the perspective of a social and historical analysis, large functional types have been favoured. This has made it possible to group artefacts that were most likely used for similar purposes and associate them with one or more activities. These groups, however, are not to be intended rigidly: first, because many objects in

antiquity (as today) were probably multifunctional, so that they could be used for different tasks in different ways without the need for a one-to-one correspondence between objects and activities;¹⁰ second, because objects, especially those from burials and sacred spaces, not only embodied an intrinsic and functional value according to their form and material features but had most likely a symbolic meaning attached to their placement and use.¹¹ In the case of Kal-e Chendar, dividing the artefacts according to a unifying classification based on types and functions is further complicated by the fact that they were discovered in disparate and disturbed contexts. This section is followed by the concluding remarks on the assemblages (9.3) that, drawing on the discussion presented in the commentary, summarise our current knowledge of the material culture at the site.

The second part of the chapter features an accurate catalogue (9.4), using the same classification as the commentary and recording the principal information about each item. Entries provide data about provenance, material, dimensions, the physical description of the objects, and their state of conservation; bibliographical references are included only for those few artefacts that have already been preliminarily published elsewhere. As for the provenance, the findspot is usually described as the excavation area (trench or tomb/grave) plus the locus, i.e. the stratigraphic unit, where the object was found. It must be stressed that stratigraphic information is not available for all of the findspots: where the investigations revealed that the deposit was as much disturbed that only a single mixed stratum was recognisable, no layers were assigned (e.g. T7 and T20). Given the absence of data from compositional analysis, observations on raw materials and technique are solely based on what was visible at a macroscopic examination. Their identification is therefore sometimes doubtful, proposed as a work-in-progress hypothesis or based on the comparison with similar artefacts. As for the metals, the term ‘bronze’, indicating a copper alloy containing a varying percentage of tin, usually not over 13%,¹² is favoured over the generic ‘copper alloy’. Golden items are classified simply as made of ‘gold’, even though it must be kept in mind that the vast majority of the jewellery works in antiquity employed gold alloys instead of pure gold;¹³ but it is out of our reach to establish if this holds true for Kal-e Chendar as well and, if so, what was the composition of the alloys. In terms of chronology, artefacts are dated exclusively by their context and by typological characterisation and comparison with other series of objects of known chronology. Apart from the coin entries, the field ‘Date’ is therefore excluded from the catalogue as it is better discussed by object type in the commentary. The catalogue also gives reference to the figures at the end of the chapter, consisting in the photographs and drawings made by the members of the expedition. With the exception of a few artefacts,¹⁴ all the objects were photographed, while only the most significant were also reproduced in drawings.

9.2 Functional types

9.2.1 *Personal adornment* (I. Bucci)

Several items of personal adornment can be counted among the objects from Kal-e Chendar. They reveal a variety of ornaments and dress accessories that were brought to light in funerary contexts exclusively and include the only golden objects (a diadem, three mouth coverings, six gold sheet fragments, and a bead) discovered at the site by the our team. The presence of golden objects inside Kal-e Chendar’s tombs does not come as a surprise, given that since the oldest antiquity gold has been valued in the Near Eastern and the Mediterranean civilisations. Its colour, brightness, and rarity have contributed to its higher consideration over the other metals and connected its possession and display to wealth and social rank, as well as to ceremonies and rituals.¹⁵ Moreover, as gold does not

¹⁰ Hoss, Whitmore 2016, 2.

¹¹ de Jong 2017, 97-100.

¹² Giardino 2010, 141-142; Oudbashi et al. 2012, 159-160. Elemental analyses by portable XRF (pXRF) carried out on some of the bronze statues from Shami in the National Museum of Iran in Tehran revealed that copper alloys with a tin content of 5.5-8.8% and a lower lead content of 1.8-5.4% were used for the ‘Greek-style’ group of sculptures, whereas a much higher lead content (6.8-14%), higher than the tin content (5-7.7%), characterised the ‘un-Greek’ group (Lindström 2019, 135-138, diagrams 15.1-15.2).

¹³ The production of jewels predominantly employed natural or intentional alloys of gold and silver at least until Roman times, when jewellery made of almost pure gold (percentages varying from 87.5% to 99.9%) become widespread (Giardino 2010, 156).

¹⁴ Nos 66-74/SO47-54, 100 (nails), no. 32/SO56 (ring).

¹⁵ Clark 1986, 50-59; La Niece 2009, 22-37.

tarnish or corrode, remaining unaltered and uncorrupted through time, it was commonly associated with immortality.¹⁶

Personal adornment is extremely indicative as the body is a 'signifier of the social world that it inhabits', a mean to show and negotiate individual and group identities: 'through decoration, clothes, jewellery, make-up, but also through entire body posture and gesture different messages can be transmitted and an endless number of combinations was used throughout prehistory up to the modern time.'¹⁷ Ornaments such as jewellery and dress accessories, therefore, are not merely decorative but are precious indicators of social, cultural, and spiritual values.¹⁸ Attempts to assign gender to objects, in particular, have contributed significantly to the understanding of social roles and relations within communities, although it must be stressed that the identification of gendered artefacts can be very problematic due to the fluidity that gender might have had in past societies, the changes in gender roles that might have occurred over time, and the regional specificities.¹⁹ Another recurring question concerning personal ornaments in burial contexts relates to their function, as funerary items could have more than one function and use. Objects produced with a specific funerary purpose, either to be used during the funeral and/or to equip the dead with worldly items for the afterlife, for instance, are not always easily distinguished from those that were instead personal belongings selected to accompany the deceased.²⁰ Necklaces, rings, and pins could have been worn in life, while eye- and mouth coverings, used to cover the eyes and mouth of the corpse (see below), are among the very few categories that were clearly and exclusively funerary.²¹ The majority of the golden diadems in burials were most likely made specifically to adorn the forehead of the deceased as well, presumably as an incontestable marker of their social status,²² although examples are known that demonstrate their use before their placement in the burial.²³

Diadem (I. Bucci)

A fragmentary gold diadem (no. 1/SO57) was found in T23, in the northern part of the space between the benches of the main chamber, close to the pottery jar P27 and to the mouth cover (no. 2/SO58). Many pottery vessels and grave goods made from various materials (see Table 1) were discovered in the same chamber, although we cannot connect the diadem to a specific body or assemblage of artefacts. As far as its material features are concerned, the diadem can be ascribed to a relatively homogeneous category of so-called pediment-shaped/pedimental diadems or stephanes, widespread during the Early Hellenistic era and characterised by some variations regarding their shape and decoration.²⁴

The diadem is a relatively short gold sheet of approximately 21 cm in total (considering what is not preserved anymore), 0.01 cm thick, slightly increasing its width towards the centre where there is a subtriangular rounded protrusion. It is pierced by a single hole at the left end –the right end, now missing, was presumably pierced as well– to be fastened to a shroud or more simply tied around the head of the deceased. The embossed floral decoration, consisting mainly in a series of vegetal spirals curling towards a central palmette or leaf, was probably made by hammering the gold sheet from the reverse side and then refining it by chiselling the front side (free-hand repoussé).²⁵ The irregularity of the design together with the unicity of the single motifs, all slightly different from one another, seems to exclude the use of one or more dies, which was instead the manufacturing technique most widely

¹⁶ See Whittaker 2006.

¹⁷ Vitezović 2013, 9–10. On the significance of personal adornment in investigating the cultural and social identity of the deceased, see the recent studies carried out on the female ornaments from the Queen's Tombs in the Northwest Palace at Nimrud, that have drawn attention to the multicultural character and the imperial implications of Neo-Assyrian royal adornment (Gansell 2016; 2018).

¹⁸ Marcus 1994; Gansell 2007.

¹⁹ Hoss, Whitmore 2016, 3. On the conscious selection of the objects to include in the burials and of the images to be shown on funerary monuments as a means to understand the role and status of women within their community, see for instance the case of the Syrian and Mesopotamian Iron Age grave goods and reliefs in Mazzoni 2005.

²⁰ de Jong 2017, 97–100.

²¹ Mazzoni 2005, 4; de Jong 2017, 97–98.

²² La Niece 2009, 28.

²³ Graziadio 2012, 347.

²⁴ Musche 1988, 41, note 80; Treister 2001, 86, 176–181; Henry 2016, 29–31.

²⁵ For an overview of this technique see Maryon 1949, 121; Giardino 2010, 85.

employed for Hellenistic diadems.²⁶ At the end of the decoration process, the outline was cut out, in this case leaving the outer edge undecorated and irregular.²⁷

The questions about the chronology and artistic milieu of no. 1/SO57 can be answered by examining its shape and decoration. Gold pedimental diadems have been found in numbers in the Mediterranean and the neighbouring regions (Northern Greece, the Black Sea, Asia Minor), dated for their vast majority to the Early Hellenism. Although the shape seems to have been known already during the Geometric period in Greece (see the examples from Eretria and Skyros),²⁸ it is not so widely distributed until Early Hellenistic times. Being beyond the scope of this study to produce an accurate list of all the findings, it will be sufficient to recall here that pedimental diadems were found in Attica,²⁹ Euboea,³⁰ Macedonia,³¹ Thasos,³² Thrace,³³ the Black Sea region,³⁴ the Hellespont,³⁵ the western coast of Asia Minor,³⁶ Cyprus,³⁷ and Southern Italy,³⁸ with Asia Minor being the area with the highest number of occurrences. The specimens are dated from the 4th century BCE to the beginning of the 3rd century BCE, even though the vast majority dates to the end of the 4th century BCE. Moreover, those from Thrace and Asia Minor form a group that is rather homogeneous in terms of manufacture, composition, and style.³⁹ The size of the diadems can vary significantly: if many are about 30-35 cm long, there are also several examples between 18 and 20 cm, such as those from the Dardanos tumulus (Hellespont) and from Cyprus.

Since almost all Hellenistic pedimental diadems were discovered in tombs, they appear to be funerary items, made therefore specifically (although not exclusively) for a sepulchral use. Many are so thin and carelessly produced, that they would have been indeed unsuitable to be worn in life,⁴⁰ a fact that seems reflected in their decoration. Beside vegetal spirals, palmettes, and acanthus calyces, these diadems often include figures with eschatological meanings connected to the afterlife, such as Dionysus-Hades and his female companion Ariadne-Persephone, the Muses, and winged figures with torches. The luxuriant vegetation that dominates the composition and creates an imaginary landscape where the figures find their place is also supposed to have a funerary meaning, being the symbol of the peace and beatification that await the deceased in the afterlife.⁴¹ Although differences in the choice of the motifs can be noticed and both exclusive floral as well as figurative decorations can be observed,⁴² these objects can nonetheless be ascribed to the same milieu.

²⁶ Treister 2001, 86, 178-180. The use of single or multiple dies or punches is often clear and can help to identify pieces produced by the same atelier. See for instance the case of the diadems from the area of the Hellespont (Sevinç, Treister 2003, 220-221) and western Asia Minor (Scatozza Hörich 2010, 111-112).

²⁷ The fact that many diadems of this type were carelessly cut or anyway carelessly made has been often pointed out and has led scholars to suggest that they were produced exclusively for a sepulchral use (see Sgourou, Agelarakis 2001, 332, 334 for further references).

²⁸ Treister 2001, 11-13, 403, fig. 3. The diadems are characterised by a projecting tongue in the middle (therefore 'Zungendiademe'), similar to that on some later examples from Cyprus (see below note 37).

²⁹ Sgourou, Agelarakis 2001, 332, note 11.

³⁰ Treister 2001, 177.

³¹ Sgourou, Agelarakis 2001, 329, 332, note 8; Bessios 2010, 226-227, 241; Bessios, Athanassiadou 2015, 183, fig. 5; Athanassiadou et al. 2019, 249, fig. 10.

³² Sgourou, Agelarakis 2001, 327-329, 331-332, 334-336, figs 1-3, 5-7.

³³ See for instance, Madytos: the diadem from Madytos, now at The Metropolitan Museum of Art (inv. no. 06.1217.1), is one of the most famous examples and it is largely published (e.g. Hoffmann, Davidson 1965, 68, fig. 7b; Richter 1969, 271, fig. 388; Scatozza Hörich 2010, 110, 112, fig. 12; 2014, 119, pl. XVI, fig. 2), being also frequently used as a parallel for other specimens. Sestos: Körpe 2004. Perinthus: Pollak 1903, 12, nos 26-27, taf. VII (Nelidow Collection).

³⁴ Pollak 1903, 8-10, nos 14-21, taf. V (Nelidow Collection).

³⁵ See, for instance, Lampsacus: Körpe, Treister 2002, 435-437, figs 7-10 (captions figs 8 and 10 inverted). Abydos: Victoria and Albert Museum inv. 627. 1884. Dardanos: Sevinç, Treister 2003, 220-221, 234, pl. 1, figs 1-6.

³⁶ On the diadems from Kyme and Asia Minor in general, see especially Scatozza Hörich 2010; 2014. On the examples from Smyrna, see Peker 2015.

³⁷ The majority of the specimens from Cyprus are unfortunately unprovenanced. See Myres 1914, 386, 392, 397, nos 3290-3293, 3533-3537 and Karageorghis 2000, 242, no. 399, all at The Metropolitan Museum of Art (inv. nos 74.51.3290, 74.51.3291, 74.51.3292, 74.51.3293, 74.51.3535). A few linear gold fillets, dated to the 4th-3rd century BCE and decorated with palmettes, come from Amathus and are preserved in the British Museum (inv. nos 1894.1101.493, 1894.1101.494, 1894.1101.495).

³⁸ See for instance the beautiful diadem from the Santa Eufemia Treasure that has been attributed to the homonymous workshop (Williams, Ogden 1994, 206-207, no. 137).

³⁹ Scatozza Hörich 2010, 111-114.

⁴⁰ Hoffmann, Davidson 1965, 58; Karageorghis 2000, 242, no. 399; Sgourou, Agelarakis 2001, 334. When the objects appear to be sturdier and show traces of wear and repairs, as in the case of the famous example from the Santa Eufemia Treasure, this may indicate that they had been worn in life (Williams, Ogden 1994, 206-207, no. 137).

⁴¹ Scatozza Hörich 2010, 115-119; 2014, 119-120.

⁴² It ought to be stressed that, although fewer in number, there exist also specimens without any decoration (Scatozza Hörich 2010, 110).

The identity of the people associated with the diadems is not an easy issue to tackle. Excluding the objects without context that have been purchased on the antiquity market, specimens that were found in multiple tombs containing the mixed human remains of several individuals, used over a long time span, for instance, cannot always be matched with a body in particular.⁴³ Due to their prevalent association with female burials and to their depiction in iconography, pedimental diadems are usually considered to be female items. It ought to be stressed, however, that some exceptions to this rule are known, such as four examples from the necropolis of Pydna associated with a male child and three young male adults respectively.⁴⁴

The tradition of pedimental diadems survives into the Roman era, although they are much less common.⁴⁵ The diadem from the antiquity market that is said to be from Miletopolis in north Mysia and is now at the British Museum is one of the best examples and it is dated to the 2nd century CE.⁴⁶ With the exception of its shape, it does not share many similarities with the specimens mentioned above, as it is made of silver instead of gold and shows a simpler garland-like decoration.

In the Near East, the tradition of headdresses, crowns, and diadems made of precious metals and sometimes embellished by gemstones is very ancient, having its roots in the 3rd millennium BCE at least (Royal Cemetery at Ur), and including an outstanding series of finds up to the 1st millennium BCE. That precious jewels and dress accessories have been predominantly preserved inside elite burials is largely a matter of chance, but we can speculate that they were not only produced as funerary paraphernalia.⁴⁷ In any case, even though it cannot be ascertained whether they exactly corresponded to their owner's possessions and appearance in life, they were socially perceived as fundamental to distinctively embody the identity of the deceased.⁴⁸ If the evidence for a rich floral decoration symbolically attesting for fertility and abundance is a recurrent feature in jewels and adornments in the ancient Near East,⁴⁹ the variety of shapes and materials that characterise them do not include pedimental diadems. They thus appear to be a foreign import from the Greek world, mostly confined, in the Early Hellenism as well as in the later periods, to the westernmost parts of the Near East.

Among the early evidence for the use of these ornaments in Elymais, the coins issued by Kamnaskires III between 82/1 and 73/2 BCE ca., can be mentioned particularly Type 7 according to the classification of the Elymaean coinage revised by van't Haaff.⁵⁰ The obverse depicts the diademed heads of the ruler and his wife Anzaze, both in profile, the latter wearing a pediment-shaped stephane, which is most likely intended here as a symbol of royalty. Another possible attestation, although its interpretation is not clear, is a miniaturised gold band (length 7.5 cm) from Majid-e Sulayman, featuring a central subtriangular protrusion and decorated by a stylised leaf branch or a herringbone design at both sides of a central arrow/triangle decoration.⁵¹ The fact that the plaque is pierced at either end indicates that, at least in its conception, it was meant to be tied to a part of the body or to another support. The object is listed among the findings discovered in the so-called 'Grand Temple' during the exploration of the Seleucid levels of the building (Temple Antérieur), but unfortunately no information is given that would clarify its function and use. However, its small size might confirm the interpretation of the objects from these levels as votive offerings. Some interesting iconographic attestations witnessing to the fashion of pedimental diadems can be also identified in Roman-Parthian period evidence. A few

⁴³ The case of the Dardanos tumulus is exemplary in this respect. Forty-two depositions on the stone klinai, four bronze cremation jars, and a sandstone ossuary were found inside the funerary chamber together with, among other grave goods, eight pedimental diadems. On the basis of the objects, it seems that the tumulus was used from the 4th century BCE to the 2nd century CE (Sevinç, Treister 2003, 220, 243-244).

⁴⁴ Bessios, Athanassiadou 2015, 183.

⁴⁵ Treister 2001, 304-305.

⁴⁶ Inv. no. BM 1953,0831.1. Williams et al. 1991. Another specimen of the same date was found in Neapolis in Palestine and it is decorated with images of twelve deities with Cybele at the centre (Jonas 1962; Naumann 1983, 278-281, 374, kat. nr. 665).

⁴⁷ See for instance the reconstruction of the full-body ensembles traditionally worn by the Neo-Assyrian queens recently proposed by Gansell mainly on the basis of the findings from the Royal Tombs in the Northwest Palace at Nimrud (Gansell 2018).

⁴⁸ Gansell 2012, 12-13.

⁴⁹ For a broad overview on ancient Near Eastern jewellery, see Maxwell-Hyslop 1971; for the Neo-Assyrian period and the Royal Tombs at Nimrud in particular, see Collon 2008. The implications of the religious and political messages conveyed by the abundance and repetition of floral and faunal designs in the decoration of Middle and Neo-Assyrian palaces and reliefs have been convincingly demonstrated by Winter 2003.

⁵⁰ van't Haaff 2007, 63-67. On the coins from Kal-e Chendar, see below.

⁵¹ Ghirshman 1976, 82, GMIS 348, pl. 56 (no photos are available for this object).

funerary female busts from Palmyra wearing diadems decorated with tendrils or acanthus leaves,⁵² and a head belonging to a female stone statue from the sanctuary of Majid-e Sulayman⁵³ seem in fact to confirm that similar ornaments were fashionable in later periods in Syria and Iran too, at least in figurative representations if not in the actual artefacts. Both these examples are dated to the 2nd century CE and interpreted as signs of a Western (Roman) influence over the local 'oriental' tradition. Roman period diadems both from the Mediterranean and the Near East otherwise include a wide variety of types that are mostly different in shape,⁵⁴ such as the fillet-shaped headbands often enriched with chains of cabochons and pendants which are abundant in Palmyrene funerary portraits.⁵⁵ Furthermore, it must be stressed that if there are plenty of depictions of headbands and diadems in Roman times, actual specimens are rare.

From the above discussion, it appears that pedimental diadems were a phenomenon typical of the Early Hellenism linked to elite burial contexts, not equally attested in the following centuries. If compared to the diadems from the North Aegean and Asia Minor, our specimen is stiffer and the whole composition is somehow rougher. Even the running tendril scrolls, that compose the main decoration and are clearly inspired by the more naturalistic yet standardised motifs of the Hellenistic diadems, are roughly executed in their high relief repoussé and all rigidly curl towards the centre in the same direction. For its features, no. 1/SO57 seems to be a local production. Its proportions are heavy if compared to the other specimens of the same length and the usual central decorative element, a palmette on an acanthus calyx, is replaced by an unclear elongated vegetal element. The latter is perhaps a stylised palmette, a long acanthus leaf or a simplified version of the tree of life, a motif with a long-standing tradition in the Near East. Similar doubts concern the minor spirals and floral motifs sprouting from the main ones, as well as the branches at both sides of the central element.⁵⁶ So, if it is safe to speculate that the diadem was inspired by Early Hellenistic prototypes, it seems that the craftsman who made it was either not familiar with the original models (perhaps because he was copying from a later prototype?), or deliberately decided to modify the decoration and adapt it to the local taste. For its general closeness with the pedimental diadems of 4th-3rd century BCE, however, it is hard to think of a different source of inspiration. So much that, on the basis of these parallels, it is tempting to date it sometime in the 3rd century BCE after the Seleucid authority was established in Elymais, or in the 2nd century BCE during the early phase of the local Kamnaskirid dynasty, when the influx of artistic and cultural Greek elements was strong.⁵⁷

The diadem could belong to one of the most ancient burials inside T23, which was then used over a long time span until the 1st century CE, as suggested by the ceramic assemblages.⁵⁸ A Hellenistic date for this burial would not be unattainable if the data from the initial fortuitous finds at the site, the excavations carried out by Stein, and the recent investigations of our team are considered. Altogether they indicate that Kal-e Chendar not only hosted a monumental religious complex, possibly one of the most renowned sacred places of Elymais, but also that it could have been the place of a dynastic sanctuary starting at least from the 2nd century BCE.⁵⁹ That notwithstanding, we cannot rule out that

⁵² Mackay 1949, 165, pl. LXI, 3; Musche 1988, 41-43, taf. VI, 1.1.1.4, typ 1. B; Dentzer-Feydy, Texidor 1993, 166, 220, nos 169, 216. Musche informs us that in the Arsacid period pedimental or similar diadems were documented exclusively by representations as no actual object has been discovered. Therefore, she compares her typ 1 to the diadems widespread in the 4th-3rd century BCE and preserved in many European museums (Musche 1988, 42). A generic 'Hellenistic' (typ 1 or 2) diadem is also worn by Queen Zenobia on her coins (Colledge 1976, 234, fig. 66g).

⁵³ Ghirshman 1976, 124, 251-252, pl. LXXXI, 3-5. The diadem is not perfectly legible in the photographs, but it is said that its lower edge is bordered by pearls and its central part is decorated by rosettes in repoussé. The sculpture is attributed to the Parthian phase of the terrace. Both R. Ghirshman (1976, 251-252) and A. Daems (2001, 50) consider it to be the portrait of a queen, even though there seem to be no further elements to substantiate it.

⁵⁴ The sample of female portraits from the Musei Capitolini in Rome that has been studied by A. Raat can be taken as an example (Raat 2013, 134-141).

⁵⁵ Mackay 1949, 165, 178-179, pls LII 2, 4, LIII, LV-LVIII, LX, LXI 1; Musche 1988, 44-46, taf. VI, 1.1.1.5. For a broader repertoire of portraits see Tanabe 1986.

⁵⁶ It must be stressed that an accurate botanical study of these floral decorations might shed more light on the species represented and their meaning.

⁵⁷ See Lindström 2019, 132 and the literature quoted there. More broadly, on the presence of Hellenistic art on the Iranian plateau and its implications, Callieri 2015. For a recent historical overview on ancient Elymais from the death of Alexander to the end of the Parthian period, see Salaris 2017, 70-100.

⁵⁸ See chapter 7.

⁵⁹ Stein 1940, 155; Sherwin-White 1984; Canepa 2015a, 78-80; Lindström 2019, 133. On the bronzes from Kal-e Chendar, which include two discernible groups of 'Greek-style' and 'un-Greek' figures and significantly contribute to the chronology and general understanding of the

no. 1/SO57 was a later production inspired by Western motifs and styles as there is evidence for this type of ornaments –even though their similarity is less striking– in Near East, and in Khuzestan in particular, in Roman-Parthian times. Perhaps less likely, given the predominant funerary character of the pedimental diadems and the material features of our object, is that it was made in the 3rd-2nd century BCE and then preserved in the family of the deceased as an heirloom before being placed in the tomb.

Mouth coverings (I. Bucci)

Three small gold bands that were found in T23 (nos. 2-3/SO58-59) and T28 (no. 4/SO81) can be interpreted as mouth coverings. Made from very thin sheets of gold (0.01 cm), they were pierced by one hole at either end indicating that they were originally sewn to a fabric or simply tied to the head of the deceased. They differ in size (ranging from 7.8 to 9 cm ca.), shape, and decoration. No. 2/SO58 is a lozenge-shaped plaque with straight short sides. It has a slightly curved profile and is divided by a central embossed line which, together with two similar lines delimiting its upper and lower borders, conveys the impression of the sealed lips and explicitly confirms that the object was conceived to cover the mouth. No. 3/SO59 is an oval band with rounded edges and a cursive rosette or star decoration made by repoussé. In regard to their original findspot, no. 2/SO58 was discovered in T23 in the area between the benches, close to the diadem no. 1/SO57 and the jar no. 20/P27 (chapter 7), while no. 3/SO59 was still lying on the benches –where many of the objects were most likely initially placed– when it was brought to light by the excavators. Finally, no. 4/SO81, an elongated band with tapering ends decorated on the border by an egg-and-dart motif, was found on the floor of T28. It is the most fragmentary of the pieces, as more than half of it is now lost. The fragment is only 4.2 cm long, but its original length must have been around 8-8.5 cm, being therefore very close to the other two examples from Kal-e Chendar and suggesting that no. 4/SO81 could be attributed to the same category.

As for their classification, it ought to be stressed that, as a general rule, identifying the purpose for which such gold plaques were made is not an easy task, especially when their original position on the body cannot be identified with accuracy or the decoration does not clearly indicate the area where they were supposed to be placed (i.e. lips or eye design).⁶⁰ In the absence of sufficient data, gold sheets are therefore mainly classified as diadems/frontlets or as mouth coverings, depending on their dimensions.⁶¹ That nos 2-3/SO58-59 should be interpreted as mouth- instead of eye-covers is confirmed by their size, shape, and decoration as the eye-covers dated to the Hellenistic and Roman-Parthian periods are generally smaller and are either joined in the middle to resemble ‘spectacles’,⁶² or are decorated with a motif reproducing the eyes.⁶³ Because its original appearance cannot be reconstructed with certainty, no. 4/SO81 is the sole of our specimens that could perhaps be an eye covering. Mouth and eye coverings were often found together inside the burials, and so it has been speculated that they served the same purpose as the gold sheet masks.⁶⁴ The concurrent presence of both items, though, was not the rule; in the majority of the instances only mouth coverings were retrieved, thus representing the largest group of such funerary gold plaques.⁶⁵ On the other hand, funerary sets including both mouth and eye coverings and masks should not automatically be taken as indicators for multiple burials, as the possibility that masks were placed on top of the other coverings cannot be disregarded.⁶⁶ However, no masks have been discovered at Kal-e Chendar so far, and the

site, and the recent analysis carried out on them, see mainly Stein 1940, pls IV-VI; Cumont 1939; Sarkosh Curtis 1993, 63-65, figs 1-2; Kawami 1987, 59-64, 169-174, nos 8, 11-12, pls 11, 14-15; Mathiesen 1992, 165-167; Canepa 2015b, 84-87, figs 6.2, 6.4; Lindström 2017; 2019.

⁶⁰ Quast 2014, 270-271.

⁶¹ Graziadio 2012, 345-346; Wygnańska 2014, 87.

⁶² See for instance the examples from Dura-Europos (Toll 1946, 29, 35, 64, pls XXXIV, XXXVII, XLIX); Tell Mahuz (Negro Ponzi 1968-1969, 304 note 40; 1970-1971, 391, 420, no. 87); Nuzi (Starr 1939, 502-503, pl. 142B); and Nineveh (Curtis 1976, 51, fig. 90, nos 6-7, 59). The item from Tell Mahuz must probably be dated slightly later in the 3rd century CE, at the beginning of the Sasanian period.

⁶³ See, for instance, the examples from Cherson (Minns 1913, 422, 507, fig. 339); Simferopol (Šul’z 1953, 83-85, pls XXVII, nos 6-7, XXIX, nos 1-2, 5, colour plate after p. 48); Gorgippia (Kharaldina, Novichikhin 1996, 365, fig. 13); and Jaffa (Hoffmann, von Clear 1968, 51-52, nos 38a-d). More rarely, plaques are both joined in the form of spectacles and decorated with an eye design, as in the specimen from Cherson (Minns 1913, 507, fig. 339).

⁶⁴ Curtis 1995, 230; Quast 2014, 288.

⁶⁵ Quast 2014, 281. This is especially true when considering the evidence offered by the Late Cypriot contexts at Enkomi, where only mouth-covers and diadems/headbands were included, often not together, in the tombs (Graziadio 2012).

⁶⁶ This has been suggested by Curtis for the richest tomb discovered at Kouyunjik (Nineveh) in January 1852 (Curtis 1995, 227), where a gold

remaining gold sheet fragments (see below nos 5-10/SO 42, SO 60, SO 68-70, SO 82) do not seem to testify for the existence of similar objects in the local funerary customs.

Looking at the function and use of these artefacts, it must be stressed that mouth and eye coverings are to be included among the few objects that are exclusively funerary (see above). The act of covering with gold the face or parts of it could have fulfilled different tasks: to preserve, being gold a guarantee against corruption, the organs that the deceased would have needed the most to see, eat, breathe, and speak in the afterlife; to block the main facial orifices and prevent the spirit from escaping the body and haunting the living, as well as demons from entering the corpse;⁶⁷ lastly, to embellish the face with strips of gold and conceal, even more if these strips were fastened to a shroud, the decay of the flesh, making the body more presentable for the funeral.⁶⁸ Moreover, since it has been suggested that mouth and eye coverings, especially when found together, could be intended as epitomes of funerary masks, some more meanings could have been attached to these objects.⁶⁹ In addition to the strictly social value that such golden objects could have embodied in the context of the burial as expression of status and wealth, golden sheets covering the face and other parts of the body (the hands and feet for instance) have been associated with the heroization and deification of the deceased and to solar symbolisms.⁷⁰ The immutability of gold and its shining colour make it particularly appropriate as a symbol of immortality and of the divine.⁷¹ With regard to gender and age implications, golden sheets in general do not seem to be exclusively male or female attributes, nor they seem to be related to the age of the deceased.

The earliest evidence of mouth coverings in Mesopotamia is possibly from the 3rd millennium BCE Royal Cemetery of Ur, as suggested by Curtis.⁷² It must be stressed, however, that in the original publication as well as in more recent studies, the examples from Ur are identified as ‘frontlets’ and ascribed to a category of headbands widespread in the Near East since the second half of the 4th millennium BCE.⁷³ Their definition and understanding was indeed motivated by the fact that they had been often found on the forehead of the deceased and it remains thus unclear whether they, or at least some of them, should be interpreted as mouth coverings.⁷⁴ Mouth-covers are otherwise attested since the 2nd millennium BCE at Cyprus and the Near East,⁷⁵ with the Bronze Age Late Cypriot specimens representing the most significant cluster.⁷⁶ Evidence of these objects can be later traced in the 1st millennium BCE, becoming popular in Western Asia from the Hellenistic period onwards and clustering especially between the 1st century BCE and the 2nd century CE.⁷⁷ Mouth coverings were distributed mainly in the Levant, Mesopotamia, and the Black Sea region, but they were also found in Asia Minor, Cyprus, Egypt, Bahrein, and western Iran.⁷⁸ To mention a few well-known examples,

sheet mask was discovered together with a pair of mouth- and eye-covers. For pertinent remarks on this topic, see also Despini 2009, 24 note 32; Quast 2014, 266-267 note 14.

⁶⁷ For these purposes, and for the practical reason of protecting the face from insects and maggots, the nostrils were sometimes closed with small gold leaves too (Quast 2014, 270 note 25, 281), as in the case of the corpses buried in the Roman period funerary chambers at Marina el-Alamein, Egypt (Daszewski 1997, 63 note 12).

⁶⁸ Curtis 1976, 57; 1995, 230. On the role of these gold coverings as embellishments of the body during the funeral, see also Seyrig 1952, 209.

⁶⁹ See note 70. Funerary gold masks are attested in the Aegean as early as the 2nd millennium BCE, when the Mycenaean examples from the famous Grave Circles A and B at Mycenae can be dated. Several examples are known from the later periods, clustering especially around the mid-1st millennium BCE in the Southern Balkans and Northern Greece (Theodossiev 1998; 2000; Despini 2009) and in the Near East in Roman-Parthian times, especially between the 1st and 3rd century CE in the area of the Levant (Curtis 1995, 226-230; Quast 2014, 277-278). Although it is tempting to identify connections and filiations among these disparate findings, it must be kept in mind that they probably represent isolated phenomena (Curtis 1995, 230).

⁷⁰ Theodossiev 1998, 360-363; Whittaker 2006, 283-285.

⁷¹ For a thorough analysis of the possible meanings of funerary masks and gold sheets, see Quast 2014, 279-284.

⁷² Curtis 1976, 59; Woolley 1934, 241-242, 246-247, pls 147, 219 (Types 1-3, 5). Different types of simple oval frontlets were common especially in the burials dated to the Akkadian period, when they were mainly female ornaments.

⁷³ See Wygnańska 2014, 95-101 with literature.

⁷⁴ Graziadio 2012, 346. Some of these frontlets were found by the excavators on the mouth or the chin of the deceased, as they had slipped down from the forehead, such as in Tomb PG/1312 (Woolley 1934, 173, fig. 48).

⁷⁵ Graziadio 2012, 347. A survey including the findings in the Mediterranean, the Balkans, the North Aegean, the Black Sea region, and the Near East from Prehistory to Roman times has been published by S. Oikonomou (see Oikonomou 2004).

⁷⁶ See Graziadio 2012 and the literature quoted there. Enkomi is the main place where these gold strips were found, reinforcing the assumption that it was indeed the site where they were first made and remained the principal centre of production also in the following periods. Out of more than 400 gold bands dating to the Late Cypriot from Enkomi, more than 25% can be tentatively interpreted as mouth coverings.

⁷⁷ Curtis 1976, 59; Quast 2014, 271.

⁷⁸ For a detailed list of the findings, see Appendix 1 in Quast 2014, 292-294. The date of the objects ranges between the 2nd century BCE and the 4th century CE.

gold mouth coverings are attested at Nineveh,⁷⁹ Ashur,⁸⁰ Nuzi,⁸¹ Dura-Europos,⁸² Emesa,⁸³ Tartus,⁸⁴ and Cyprus.⁸⁵ Moreover, a similar tradition of covering the head and sometimes the neck and the shoulders of the deceased with gold foils is also known in Mesopotamia at Nippur,⁸⁶ Seleucia,⁸⁷ Babylon, and Uruk.⁸⁸

On the basis of the many existing parallels, it is possible to ascribe the objects from Kal-e Chendar to the same category of mouth coverings and, following the chronology assigned to the majority of the specimens, propose a date between the 1st century BCE and the 2nd century CE. However, if compared to other artefacts dated to this period, which mainly consist in plain plaques sometimes characterised by a low ridge or an incision in the middle to create a schematic lips design, the mouth-covers from Kal-e Chendar are far more elaborate. In particular, the execution of no. 2/SO58 that clearly attempts to a naturalistic lips design, and the repoussé decoration of no. 3/SO59⁸⁹ and no. 4/SO81⁹⁰ make them stand out from the majority of the production. Therefore, it is not too far-fetched to consider these objects, as the diadem no. 1/SO57, the product of a local Hellenising manufacture.

Gold sheet fragments (I. Bucci)

Also from T23 and T28 come eight fragments of gold sheet (nos 5-10/SO42, SO60, SO68-70, SO82) folded many times and dented. Originally, they must have been thinner than those used for the diadem and the mouth coverings already examined –which might explain their worse state of preservation– but were most likely unsuitable to be used as proper gold foils for gilding objects. The fact that one of the fragments (no. 8/SO69) is pierced by a small hole seems to further corroborate this hypothesis. They could have been used as decorative plaques to embellish the clothes or the shroud of the deceased⁹¹ or as small leaves composing funerary wreaths like those found at Nineveh⁹² and Dura Europos,⁹³ although it is now impossible to reconstruct their original shape and size.⁹⁴ Another option could be that they were employed to cover the face and the neck of the corpses, according to a funerary practice attested for the Parthian period in Mesopotamia at least at Seleucia, Babylon, Nippur, and Uruk.⁹⁵ Whatever their original function may have been they were probably part of rich sets of golden objects associated with the burials, of which only a few fragments survive.

Beads and pendants (E. Foietta)

The beads found within the funerary chambers at Kal-e Chendar are 19 in total. The spherical shape, which was the easiest to craft, is the most common at the site counting five beads (nos 12, 20, 21, 22, 25). Nevertheless, hexagonal, drop, barrel, lenticular, cylindrical, and ovoidal beads were also attested at the site. As it is typical for this type of findings, beads are made from various materials, showcasing a preference for multi-coloured ornaments such as necklaces, bracelets, and armlets, attested in jewels and representations of jewels in the Hellenistic and Parthian periods on various types of supports.

⁷⁹ Curtis 1976, 51, nos 3-5, fig. 89 ('Lady's Tomb').

⁸⁰ Andrae, Lenzen 1933, 96-97, taf. 47a.

⁸¹ Starr 1937, 502-503, 556, pl. 142B (Tomb III).

⁸² Toll 1946, 29 (Tomb 6, Loc. III), 35 (Tomb 6, Loc. XV), 43 (Tomb 13, Loc. IV), 58-59 (Tomb 24, Loc. XVI, XIX), 61 (Tomb 28, Loc. VII-VIII and central chamber), 64 (Tomb 32, Loc. XV), pls XXXIV, XXXVII, XLI, XLV, XLVI, XLVIII, XLIX.

⁸³ Seyrig 1952, 209; 1953, 12-13, 15, 21-22 (Tombs 5, 6, 10, 14).

⁸⁴ Quast 2014, abb. 3, nos 4-5.

⁸⁵ Oikonomou 2004, 120.

⁸⁶ Peters 1898, 227; Quast 2014, 283, abb. 10.

⁸⁷ Yeivin 1933, 49. It seems that at Seleucia the mouth was sometimes covered with potsherds instead of gold sheets (Yeivin 1933, 46).

⁸⁸ Negro Ponzi 1968-1969, 304 note 41; Curtis 1995, 229.

⁸⁹ The rosette decoration on no. 3/SO59 finds some antecedents in the mouth coverings from Late Cypriot Enkomi (see for comparison inv. nos 1897,0401.224, 1897,0401.226, 1897,0401.227 at the British Museum) and from Macedonia in the Archaic and Classical periods (Despini 1998, 80, fig. 5; Descamps-Lequime, Charatzopoulou 2011, 112, 133, 135, 137, 216-217, 221, nos 36/2, 53/2, 54/2, 56, 92/2, 95/1).

⁹⁰ The egg-and-dart motif on the border of SO81 is a long-standing Classical pattern also adorning, for instance, some of the Early Hellenistic diadems mentioned above in the text.

⁹¹ Examples of such small trimmings were found in many burials of the Late Hellenistic and Roman-Parthian periods. See Quast 2014, 278 for further references.

⁹² Curtis 1976, 54, 56, 59, 63, fig. 103, cat no. 23.

⁹³ Toll 1946, 32, 40, 44, 47, 89, 114-116, pls XXXVI, XL, XLII, LVII.

⁹⁴ For the comparison and distribution of similar artefacts dated to the Hellenistic and later periods, see Pedde 1993, 213-216, figs 8-13 and Quast 2014, 267, 269-270, abb. 3.1.

⁹⁵ See above notes 86-88.

Beads in gold (no. 11 - SO10), carnelian (no. 12/SO88), orange banded agate (no. 13/SO09; no. 14/SO12; no. 15/SO40; no. 16/SO89), brown agate (no. 17/SO66), eye agate (no. 18/SO11), brown chalcedony (no. 19/SO15), black onyx (no. 20/SO13; no. 21/SO14; no. 22/SO41), bone (no. 23/SO87; no. 27/SO92; no. 28/SO93), and glass (no. 25/SO91; no. 26/SO86; no. 27/SO72) were found at Kal-e Chendar.⁹⁶

Agate, carnelian, and black onyx belong to the mineralogical class of chalcedony, a cryptocrystalline form of silica, composed of very fine intergrowths of quartz and moganite. These stones typically range from translucent to opaque and come in a wide variety of colours, including various shades of black, blue, brown, green, grey, orange, pink, red, white, yellow, and combinations thereof. Specifically, agates are chalcedonies that have coloured concentric or linear areas, or chalcedonies with dendritic inclusions.⁹⁷ They are commonly categorized based on their macroscopic appearance. For example, the eye agate (no. 18/SO11) can be easily recognized by its distinctive central brown area resembling a pupil. Many carnelian stones undergo a heat treatment process that alters the concentration of iron oxide, inclusions, and impurities within the stone, resulting in a typically brighter orange-red colour on the surface. Numerous grey chalcedonies are subjected to heat treatment using iron minerals to transform them into carnelians. These artificially produced carnelians are visually indistinguishable from their natural counterparts.⁹⁸ Black onyx can also be artificially produced through the precipitation of charcoal within the mineral cavities of a chalcedony during treatment involving sulfuric acid and honey diluted with water.

Throughout ancient times in the Near East, Central Asia, and India, carnelian, agate, and black onyx stones were commonly used for crafting beads. The earliest spherical carnelian beads in the Near East were discovered in archaeological layers dating back to the 7th millennium BCE in North Mesopotamia. However, it was during the Obeid period that the practice of recovering beads became more prevalent, extending to the Persian Gulf region as well.⁹⁹ Between the late 4th and early 3rd millenniums, a diverse array of bead ornaments was uncovered at multiple sites, signalling the increased variety in bead shapes and reflecting technological advancements across different workshops. During the second half of the 3rd millennium BCE, the widespread diffusion of carnelian beads within aristocratic burials became exceedingly common in various locations such as Ur, Uruk, Eridu, Kish, Tello, Mari, and Susa, competing with the lapis jewels production. These interesting findings provided evidence of a strong preference for red-gold adornments, which rivalled the popularity of blue-gold ones, primarily crafted using lapis lazuli sourced from the Afghan region.¹⁰⁰

During the transition from the 3rd to the 2nd millennium BCE, workshops were likewise identified in Larsa, although their technical processes and produced goods were notably less advanced when compared to those found in the Indus Valley area. On the other hand, highly developed workshops were identified in the major archaeological cities of North India, such as Mohenjo Daro, Harappa, Chanhu Daro, and Lothal during the same period. These locations also served as significant sources of high-quality raw materials, which was exported in different areas.¹⁰¹ Agate deposits were found in the proximity of Susa, which served probably as the nearest supply area to Kal-e Chendar. Additionally, natural resources were identified in Southern and Central Mesopotamia, particularly near Ur, near the modern city of Baghdad, and in the Teheran region, as well as in the eastern lands facing the Caspian Sea. The Deccan plateau and the Indus Valley were likely the primary source regions for the 'natural' carnelian.¹⁰²

⁹⁶ For the bead no. 24/SO90, excavated during the campaign conducted at the site by the Iranian team only, the material of production is unknown.

⁹⁷ Bouquillon, Poirot 1995, 35.

⁹⁸ Bouquillon, Poirot 1995, 35.

⁹⁹ Inizan 1995, 22.

¹⁰⁰ Inizan 1995, 22.

¹⁰¹ An innovative technique was developed in these workshops, which allowed the production of etched beads with a white linear decoration made with the heating of the sodium carbonate (Inizan 1995, 23).

¹⁰² Inizan 1995, 21; Bouquillon, Poirot 1995, 36-37, carte 1. Only a more detailed lithological analysis will furnish additional information for the origin of the material.

It is uncertain whether the beads found at Kal-e Chendar were produced on-site or in the Mal-e Mir region by one or more workshops, or if they were imported from the supply areas. In fact, workshops might have imported raw materials in blocks, similar to those discovered in certain archaeological layers at Susa during the 3rd millennium BCE.¹⁰³ Nevertheless, no workshop structures or remains of beads production were found at Kal-e Chendar or in the neighbouring region. The trade of carnelian and agate in various stages of production likely followed an east-west direction along important trade routes connecting India, the Iranian plateau, and Mesopotamia. Additionally, a well-established maritime route was set up during the Seleucid and Parthian periods, connecting India with the main centres of the Gulf region.

A significant cluster of beads (nos 11, 13, 14, 18, 19, 20, 21) was discovered inside T7, located west of Terrace 3. They were related probably to one or more bracelets or necklaces composed of gold, agate, chalcedony, and black onyx beads. The gold pomegranate bead (no. 13/SO9) with a loop to the top is crafted with extreme refinement. This type of bead with an apotropaic value usually associated with abundance and prosperity was crafted since the 3rd millennium BCE in the Middle and Near East.¹⁰⁴ During the Neo-Assyrian period, pomegranate beads were very fashionable and widespread, as attested by the multiple recoveries of these jewels in the Assyrian Queen's Tombs of the North West Palace excavated at Nimrud.¹⁰⁵ This jewellery production continued during the Achaemenid, Hellenistic, and Parthian periods with the recovery of several precious pomegranate beads and the representation of them for instance on some necklaces carved on the funerary busts from Palmyra.¹⁰⁶

The preference for multi-coloured jewellery in beads, as the one discovered in T7, has been well-documented since ancient times in Mesopotamia and Iran. However, it became even more prevalent during the Hellenistic and Parthian periods, as evidenced by the numerous findings disclosed particularly in funerary contexts in the Near and Middle East. A clear example of this style is a necklace found in the Vaulted Tomb 2 of the Ville des Artisans in Susa. According to Ghirshman, twelve beads made of amber, carnelian, and agate were found in the upper coffin within the right niche of this chamber tomb. Based on the discovery on the upper torso of the buried individual, it is likely that the beads originally belonged to an elaborate necklace.¹⁰⁷ One or more necklaces were disclosed at the same site in an earth burial (Tomb 1Z2 - VdA/2,b) which, according to the stratigraphic sequence, was referred to the Seleucid period (3rd-mid-2nd century BCE). The jewels were composed of sixty-two yellow glass beads and eleven round beads in carnelian.¹⁰⁸ Necklaces and bracelets composed of beads of different materials (mainly semiprecious stones) were discovered in different Seleucid and Parthian cist graves of Uruk (Ziegelgräber 575, Grab 587),¹⁰⁹ coffins (Pantoffelsarkophage 597, 606, 648, 654, 660),¹¹⁰ and earth tombs (Erdgräber 693, 697, 702). Similar jewels attesting to a multi-coloured fashion were discovered also in several Parthian chamber tombs excavated at Seleucia on the Tigris, testifying a widespread and common use of these ornaments across different classes of the society.¹¹¹ Beads of different colours and shapes were occasionally recovered also in sanctuaries with some similarities with Kal-e Chendar such as Majid-e Sulayman and Bard-e Neshandeh in archaeological layers connected to the use of the religious buildings at those locations.¹¹²

¹⁰³ Michel 2016, 89, nos 64-65.

¹⁰⁴ See, for instance, the pendant of an earring from Marlik (end of the 2nd millennium BCE) (D'amore 2007, 25, fig. 13; 29).

¹⁰⁵ See a rock crystal pomegranate from Tomb II (Hussein 2016, pl. 89, b), two gold necklaces with different beads also in the shape of gold pomegranate from Tomb III, Coffin 1 and Coffin 2 (Hussein 2016, pl. 89, c; pl. 146, a). See also the crown of the Queen Hama from Tomb III as comparisons (Hussein 2016, 123, pls. 129-130).

¹⁰⁶ Mackay 1949, 176.

¹⁰⁷ Boucharlat, Haerinck 2011, 71, pl. 16.

¹⁰⁸ Haerinck 2018, 216-217, 223, pl. 4.

¹⁰⁹ Pedde 1995, 161-162, taf. 226; 164, taf. 231.

¹¹⁰ Pedde 1995, 172-174, taf. 235, 238; 184-186, taf. 253, 255, 257, 258; 192-194, taf. 262-264.

¹¹¹ See Tombs 131 e 2: Yeivin 1931, 49-51, pl. XIX; 54, pl. XXI, fig. 1.

¹¹² Ghirshman 1976, 332, pl. CVII, 9; 332, pl. CVIII, 4

Rings (E. Foietta)

Five small bronze rings (nos. 30-34/SO38, SO83, SO56, SO67, SO71) were discovered in different tombs (T20, T23, Gr3) at Kal-e Chendar. Based on their main features (inner Ø 1.1-1.5 cm), they can be interpreted possibly as finger rings. Alternatively, they could be components of other decorative items such as chains, necklaces, earrings, or even metallic elements of wooden furniture (cf. no. 43/SO85).¹¹³

Three similar rings, parts of a wooden lid as suggested by R. Boucharlat ed E. Haerinck, were discovered inside the Vaulted Tomb 5 of the Ville des Artisans at Susa.¹¹⁴ Small bronze and iron rings similar to the examples presented in this chapter were commonly published in catalogues of small finds from different sites of the Seleucid and Parthian periods from the Near and Middle East, without providing specific chronological indications.¹¹⁵

Needle and pin (E. Foietta)

A bronze needle and a pin, probably to secure garments or serve as a hairpin, were discovered within two chamber tombs. Needle no. 36/SO84 from Gr3 exhibits a simple shape, featuring a hole at the head. Conversely, the pin no. 35 (SO16), characterised by larger dimensions (length: 14 cm), was discovered inside the funerary chamber (T7). This object is remarkable for the in-the-round decoration cast on its head. Even though the surface is heavily abraded and partially oxidized, it is possible to identify a man on the right and a female figure on the left side, both seated on a throne, or more probably, a bench without backrest, with a simple pillow on the seat. The man is partially undressed, exposing his torso. He is bearded and wears a distinctive headdress, likely a cylindrical 'modius', placed on a thick curly mass of hair. His left arm is lifted, holding an unpreserved staff or sceptre, while his right arm embraces the woman's shoulders. The bent legs are concealed by a heavy drapery. The woman is veiled and wears a long dress, although it is challenging to determine whether she wears both a chiton and a himation. Her right arm rests close to the body, presumably with the hand holding her breast. Both the figurines and the seat rest on a base in the shape of a flower, most likely a lotus flower, corresponding to the lower part of the pin head.¹¹⁶

Given its dimension and the comparisons that can be made, this object is likely a hairpin. It might have been used to secure the hair of the deceased, possibly a woman, who was buried inside T7.¹¹⁷ Alternatively, it could have been a funerary good simply placed as an offering within the tomb. Metal hairpins with simple, rounded heads were commonly discovered in archaeological contexts. They are also depicted in various forms in iconography from the Hellenistic and Roman periods on different types of support. As an example, the famous Fayum portraits revealed numerous hairpins made of gold and other precious metals, used to secure the intricate 'Roman' aristocratic headdresses of the period, which often included veils. Some of them displayed precious or semi-precious stone inlays, but small casted 'sculpture' in-the-round, such as the one attested at Kal-e Chendar, unfortunately completely lacks in these representations.¹¹⁸

In-the-round figurines are well documented on the head of certain Hellenistic and Roman acus crinalis or comatoria crafted from materials like iron, bronze, bone, and precious metals (such as gold, electrum, and silver). These objects often feature depictions of a single god or group of gods, aristocratic men, and women, as well as various objects, like amphoras. Remarkable examples of the latter type can be found for instance in the 'House of the Menander' at Pompeii. The tradition of representing deities on the pinheads began during the Hellenistic period with numerous attestations, particularly those of the goddess Aphrodite. The choice was probably due to her connection with the

¹¹³ See: Muscarella 1988, 280, nos 383-384.

¹¹⁴ Boucharlat, Haerinck 2011, 74, pl. 29: GS-2495a, 2496a, b.

¹¹⁵ See, for instance, for Majid-e Sulayman: Ghirshman 1976, 332, pl. CVIII, 1.

¹¹⁶ For the interpretation of the blue lotus flower, see: Cellerino 2015, 121-123.

¹¹⁷ For the function and dimension of the hairpins: Jacobsthal 1956, 91-92.

¹¹⁸ Pirzio Biroli Stefanelli 1991b, 29-30.

feminine sphere, encompassing notions of beauty and self-care.¹¹⁹ During the Hellenistic period, the ‘fashion’ of adorning the head of hairpins with gods was not confined to Greece and Macedonia. This is evidenced by the discovery of several hairpins in the archaeological layers of the Athenian agora, primarily featuring representations of Aphrodite and Eros,¹²⁰ but it extended also to other regions, such as Egypt,¹²¹ Central Asia (notably Begram), and even reached as far as India, where examples were recovered at Taxila.¹²²

Numerous Hellenistic bronze hairpins with different gods represented on the heads (Aphrodite, Artemis, Isis, Serapis, Cybele, Horus, Bes, etc.) are now preserved in the Pelizaeus-Museum of Hildesheim and, according to Ippel, are dated to the end of the 3rd or the 2nd century BCE. These objects and other bronzes were originally discovered in a rough pot in the ruins of an old house in Galjüb (Egypt), 16 km north of Cairo, and they were sold by an art merchant. Even if a punctual comparison with the example from Kal-e Chendar is lacking in this unique assemblage, it is interesting to observe the great number of gods’ iconographies attested on the hairpins and their naturalistic style, which is fairly comparable with our hairpin.

This Hellenistic tradition of crafting hairpins endured through later periods, notably flourishing during the Roman period with significant productions. Hairpins made of bronze and ivory, discovered at Pompeii with a terminus ante quem before the 1st century CE, portrays various subjects such as the goddess of beauty and female aristocratic women adorned in a himation. These examples closely adhere to Hellenistic prototypes in terms of features, details, and proportions.¹²³ A naturalistic style can also be identified in certain valuable gold hairpins from the Esquiline Treasure, which unfortunately is no longer extant. This collection featured in-the-round depictions of Aphrodite on several specimens, each showcasing different gestures.¹²⁴ Furthermore, a silver hairpin of unknown provenance retrieved from the antiquity market displays a well-proportioned Hera-Juno. This find is currently preserved at the British Museum (inv. no. BM 1824,0452.7) and is stylistically dated to the Roman imperial period.¹²⁵

The Hellenistic hairpin tradition continued to flourish also in other regions, including Central Asia, where local deities sharing attributes and characteristics with ancient Greek gods were represented on pins’ heads. On a gold hairpin, now preserved at the British Museum (inv. no. BM 1962,1112.1), coming from the antiquity market and believed to have been unearthed in Pakistan, a fortune goddess (Sri?) is cast atop. This goddess exhibits several traits reminiscent of Aphrodite, holding a bunch of grapes in one hand, while a child grasps her leg.¹²⁶

Numerous representations of gods on pins made from various materials during the Hellenistic and, especially, the Roman period are set on a capital instead of a flower, unlike the specimen from Kal-e Chendar.¹²⁷ For instance, two simplified Roman hairpins featuring Aphrodite and Athena are placed on a streamlined base of this type and are characterised by a simplified style when compared to that of Kal-e Chendar.¹²⁸

Hairpins with figurative heads from the Parthian Empire, spanning from the 3rd century BCE and the 3rd century CE, are very rare. In fact, within Musche’s volumes dedicated to Parthian and Sasanian jewellery, hairpins receive only brief mention within the chapter concerning headgear, and they are

¹¹⁹ A hairpin in gold, preserved at the British Museum, was discovered probably in Syria: Higgings 1970, 175-176, pl. 53 h. For a complete list of specimens with in-the-round Aphrodite on the head: Jacobsthal 1956, 83-84; Hoffmann, Davidson 1965, 192.

¹²⁰ Thompson 1993, 18.

¹²¹ Ippel 1922; Hoffmann, Davidson 1965, 192, fig. 72; Krug 2005, 209-210.

¹²² Marshall 1951, 12-15, 586, nos 227-228, pl. 173y, pl. 182.

¹²³ Barré 1840, 191-192, pl. 93.

¹²⁴ The representations of jewels are only recorded on the original publications: Pirzi Biroli Stefanelli 1991b, 102-103.

¹²⁵ https://www.britishmuseum.org/collection/object/G_1824-0452-7 (last view: 10/07/2023).

¹²⁶ https://www.britishmuseum.org/collection/object/A_1962-1112-1 (last view: 10/07/2023).

¹²⁷ Marshall 1951, 12-15.

¹²⁸ Pirzi Biroli Stefanelli 1992, 72.

not included in the comprehensive catalogue.¹²⁹ However, a few basic bronze hairpins lacking figurative head do originate from the nearby sanctuaries of Majid-e Sulayman and Bard-e Neshandeh.¹³⁰

A solitary Parthian hairpin, displaying partially an elaborated top adorned with two figurines similar to the example from Kal-e Chendar, is currently exposed at the British Museum (inv. no. BM141529). It depicts a couple dressed in Parthian clothes: the man on the right reclines as if it was on a kline, wearing a draped tunic typical of the Parthian tradition, while his left hand holds a cup. The woman is seated, dressed in both a chiton and a himation. They are positioned above an open flower, resembling the discussed hairpin. According to S. Winkelmann's interpretation, this scene probably portrays a funeral banquet.¹³¹ Although it originates from the antiquity market, the object was discovered probably in Khuzestan, and probably at Majid-e Sulayman, as reported in the British Museum database. It is stylistically dated to the 2nd-3rd century CE, exhibiting distinct Late Parthian characteristics in terms of both style and iconography.

Presently, no comparisons were found with the discussed hairpin, distinguished by two figurines seated in close proximity to each other. This can be seen both within the category of hairpins and across categories encompassing jewellery and small metal artifacts. Nevertheless, the tradition of representing gods on the head of pins is widely documented from the Hellenistic period onwards across a broad geographical area. Considering the distinct features of the iconography, the established tradition of hairpins with in-the-round figurative heads, often depicting deities, and taking into account the context of the discovery inside a chamber tomb, it is possible to propose a preliminary identification for the two figures with Hades/Saturn and Persephone/Proserpina seated on either a throne or on a simple seat. The frontal depiction of this divine couple, along with the presence of a headdress resembling a 'modius' on the male deity's head, his semi-nudity, and the pose of his left arm, supporting probably a staff or a sceptre, provide further indications to support this hypothesis.

The iconography of the enthroned gods of the Netherworld, where the two deities are generally represented in right profile, has been widespread since the 5th century BCE. For instance, this depiction is found on various pinakes from Locri with some variations. In the Z 8/31 type, Persephone appears in the foreground, while in the 8/32 type, she appears in the background. The goddess typically wears a chiton featuring a very low kolpos, with a smooth band near the hem or neckline. Over this, she drapes a himation, occasionally pulled over her head, and she may have a pair of sandals on her feet or even be depicted barefoot. In the 8/31 type, her hair is styled in a sort of braid beneath the raised himation, partially covering the back of her neck, but leaving her forehead exposed. The attributes of the deity are multiple: a rooster and ears of grain or a rooster and a phiale. Hades is draped in a himation that wraps around the lower part of his body, falling from his left shoulder and leaving his torso exposed. In this 'type W', the god's attributes include a cluster of flowers and a phiale, which are absent in the representation of the discussed hairpin.¹³² Depictions of Hades and Persephone seated on a throne or reclining on a kline are also attested on Attic red-figure pottery. For example, a kylix preserved at the British Museum and attributed to the painter Codrus showcases such portrayal,¹³³ even though the posture differs from the hairpin representation.

The iconography of Hades and Persephone regally seated on a throne persisted in numerous representations on Apulian vases from the late 4th century BCE, with the god consistently positioned on the right and the goddess on the left. In these depictions, both the divine figures, elegantly seated on thrones or reclining on klinai, held adorned sceptres, as exemplified by the renowned Apulian B 585 crater, crafted by the White Saccos painter and preserved at the Antikesammlung in Kiel. Within this elaborate scene, the deities are portrayed within their palace. Similarly, the 'Underworld krateres'

¹²⁹ Musche 1988, 241-245.

¹³⁰ Ghirshman 1976, 330, pl. XCV, 4; 332, pl. CVIII, 5.

¹³¹ Winkelman 2015, 276, abb. 74.

¹³² Marroni 2016, 40-41.

¹³³ Smith 1896, 114-115.

preserved in Naples, identified as 3222 (16/82), present further instances of this frontal representation of Hades and Persephone.¹³⁴

The iconography of Hades/Saturn, starting from the Hellenistic era and enduring through the Roman period, partially overlapped with the representation of another god, Serapis, which gained widespread popularity even beyond the borders of Egypt.¹³⁵ Serapis is usually depicted wearing a modius on his head and garments similar to that of Hades. He is also frequently shown seated on a throne or a simple seat. If the model for the hairpin's design were linked to this specific deity rather than Hades/Saturn, the couple might be more accurately interpreted as Serapis and Isis. However, it is important to note that the goddess Isis typically wears an elaborate crown or headdress, a feature completely absent from the Kal-e Chendar pin.¹³⁶ Representations of these juxtaposed deities are highly prevalent across a variety of media, including statues, bronze figurines, gems, cameos, and jewels.¹³⁷ On numerous carved gems, for instance, Serapis is portrayed seated on a throne, adorned with garments and attributes akin to those featured on the examined item. Isis or Demeter are often depicted alongside him, albeit not always in seated position.¹³⁸

Both proposed identifications, namely Hades/Saturn and Persephone/Proserpina or Serapis and Isis, remain valid considering the hairpin's discovery within a funerary context and the connection of all these deities with the Underworld. This connection is reinforced by the longstanding tradition of producing hairpins featuring deities, spanning from the Hellenistic period onwards.¹³⁹ Grounded in stylistic analysis, the artifact aligns more closely with the Hellenistic tradition (3rd-2nd century BCE). This proposal is strengthened by the precise portrayal of the anatomical features of the deities, along with the deliberate omission of the designated Parthian frontal pose, in preference for a heightened emphasis on three-quarter view. Analysing the characteristics and comparisons suggested for the hairpin, pinpointing the precise area of production remains elusive, as it is equally plausible that the object might have been imported, potentially from other regions influenced by the Hellenistic culture.

9.2.2 Toiletries and furniture

Mirror and Cosmetic Tool (A. Cellerino)

The bronze mirror and spatula nos 37-38/SO65, SO63 were found in the layer (SU32) that filled the space between the three benches of the main funerary chamber of T23.

Evidence of real mirrors or representations in art are numerous in ancient Near East and come from different regions and historical periods.¹⁴⁰ In the first half of the 1st millennium BCE especially in North Syrian stone orthostats and stelae, mirrors are a typical attribute in the representations of queens and goddesses.¹⁴¹ In the contemporary Assyrian art only the Queen Naqia was depicted holding a mirror in her left hand on a fragmentary bronze slab, now in the Louvre,¹⁴² which probably decorated the base of an altar or podium for a divine statue.

Actual handled mirrors were element of high-ranking females' grave goods from the Neo-Assyrian to the Parthian period showing similar characteristics: a flat disk with a projecting tang to be fitted into a wooden, bone or ivory handle. The mirror found in T23 (no. 37/SO65) belongs to this simple

¹³⁴ Trendall, Cambitoglou 1978, 430-432, pl. 160, 2.

¹³⁵ For the representation of Serapis and its iconography: Tran Tam Tinh 1983.

¹³⁶ In a few representations Isis rises a simple veil on her head as in the Kal-e Chendar pin. For the representation of Isis also in relation to the iconography of Serapis: Bricault, Versluys (eds) 2011.

¹³⁷ Pfrommer 2005, 688-689.

¹³⁸ Maaskant-Kleibrink 1978, 146, no. 237, pl. 49; Vollendweider 1984, 194, no. 316, 222, no. 361. Busts of Serapis with a modius and Isis are extremely common on gems, seals, and cameos: Maaskant-Kleibrink 1978, 231, no. 576, pl. 104; 247, nos 648-650, pl. 114; 270, nos 735-736, pl. 126; Vollendweider 1984, 55, no. 76. An interesting representation of Isis seated on a throne can be found on a small bronze piece from Herculaneum dated to the 1st century CE (Gasparini 2016, 122).

¹³⁹ However, it is impossible to rule out the possibility that these figures might also be local deities or local manifestations of Greek gods, perhaps related to the Kal-e Chendar sanctuary itself, of which the iconography is currently unknown.

¹⁴⁰ Albenda 1985, 2-9.

¹⁴¹ Ornan 2002, 469-474.

¹⁴² Paris, Musée du Louvre, AO 20 185.

type and does not find comparisons with the numerous examples from the temples on the terraces of Majid-e Sulayman, one of the most important sanctuaries of Hellenistic and Parthian Elymais so far excavated.¹⁴³ The majority of the mirrors recovered were found in the votive deposit of the Temple Antérieur, dated in the Seleucid period,¹⁴⁴ and are plain or decorated disks with concentric projecting circles and a small lug handle at the back. A different type of mirrors have a handle in the shape of a nude female figurine raising her right arm or with upturned arms to support the plain disk.¹⁴⁵ Circular mirrors of the plain type are numerous in the grave goods of the Dura-Europos's necropolis.¹⁴⁶ As the mirrors from Majid-e Sulayman they have no handles and are usually of very small size (4-5 cm in diameter).¹⁴⁷ The tombs in which they are found are dated in the 1st-2nd century CE.

The bronze spatula, probably for cosmetic use, has a precise comparison with an analogous spatula with a long blade, concave edges and decorated shaft from Dura-Europos, Tomb 54,¹⁴⁸ dated by Toll from the 2nd century BCE to the early 1st century CE. On the basis of parallels with the spatulae found in the excavations in Olynthus, Toll suggests that this spatula belongs to an earlier type. However, the spatula from T23 greatly resembles the roman *spathomele* or spatula probe, an instrument commonly used to mix powders and ointments in medicine,¹⁴⁹ pharmacy, and in the cosmetics sector. The cylindrical shaft with the olivary terminal part was used to mix and amalgamate the medicine and the spatula was used to apply it on the affected part and in various surgical interventions.¹⁵⁰ Actually, spatulae of different types are a very common gift in graves from the Hellenistic¹⁵¹ to the Parthian period indicating that their use was not confined to a medical context.

Metal Appliques (A. Cellerino)

The three objects nos 40-42, all found on the east bench of the main funerary chamber of T23, have not comparisons. Similar in shape, they have slightly different measures. It is therefore difficult to propose a functional interpretation. Based on the characteristics of the items, as the lack of holes for securing them with nails, and their occurrence inside a tomb, it seems possible that they could be lug handles to be probably fitted in a wooden box.

The small iron lunate element no. 39, found in the layer of soil and debris close to the T23's door, is corroded and seems to have not any fixing hole or tenon.

Ring (A. Cellerino)

The iron ring no. 43/SO85 found on the threshold at the entrance of T26, could be used for many different purposes. The material and diameter lead us to exclude that it was a piece of jewellery. Probably it was a part of the securing bolt of the stone door or was used in connection with pieces of furniture or boxes stored inside the tomb.¹⁵²

9.2.3 Vessels and Table Ware

Metal vessels (A. Cellerino)

Two fragmentary bronze vessels, nos. 44-45, were found in T23. The metal is heavily corroded and the vessel severely damaged. The bowl no. 44/SO61 and the stand no. 45/SO37, found respectively in layers that filled the space between the three benches of the tomb (SU32) and the area close to the entrance

¹⁴³ Ghirshman 1976, 82, pl. 57, pl. CIV.

¹⁴⁴ Ghirshman 1976, 77.

¹⁴⁵ Ghirshman 1976, 82, pl. 57, pl. CIV.

¹⁴⁶ Toll 1946, 122-123; pl. XXXVII, Tomb 6; pl. XLIII, Tomb 23; pl. XLVI, Tomb 24.

¹⁴⁷ Only two mirrors, found respectively in Tombs 47 and 54, are larger measuring 13.5 and 12.6 cm in diameter (Toll 1946, pl. LV, Tomb 47; pl. LVIII, Tomb 54).

¹⁴⁸ Toll 1946, 123; pl. LVIII, length 16.8 cm.

¹⁴⁹ Bliquez 2003.

¹⁵⁰ Bliquez 2003, 323.

¹⁵¹ Spatulae or kohl-sticks were found in the Neo-Assyrian palaces but not in the tombs of the period. This absence seems to indicate that it was not an Assyrian practice to use them as grave gifts (Curtis 2013, 123-124).

¹⁵² Curtis 2013, 56-58.

(SU20), were probably part of a table set. Metal vessels, namely bronze, gold and silver vessels, are a well-known type of luxury tableware frequently occurring in palatial and funerary contexts.

The shallow bowl no. 44/SO61 is a very simple form, whose size and shape suggest that it was an individual drinking vessel, with a long history belonging to a well-known metalware tradition established in Mesopotamia and Iran from the late Bronze Age and the early Iron Age.¹⁵³ Its presence in T23 attests that the type was still current in the middle Parthian age,¹⁵⁴ even if metal vessels are not frequent funerary gifts in that period.¹⁵⁵

The bronze cylinder no. 45/SO37, open at both ends, served as stands for round or pointed bottomed vessels of probably small sizes (the stand's upper part is only 6.5 cm in diameter) as the bowl no. 44, that are unable to stand on their bases. Generally stands were produced in large amount in ceramic, a material cheaper and easier to work than bronze.

The small shallow bowl no. 46/SO97, found in the level (SU7) leaning against the east façade of wall SU4 in Tr1, is severely damaged and its function as a strainer is unclear. It cannot be ruled out that the holes, given their asymmetry, were subsequently made after a first restoration attempt, to reuse the bowl as a strainer.

Moorey remarked the existence in the ancient Near East, in the late Bronze Age, early Iron Age and even in the Achaemenid period,¹⁵⁶ of metal sets consisting in bowls and filters associated to cauldrons and situlae for wine consumption.¹⁵⁷ Similarly, Buccholz notes how in the Levant the filters, jugs and bowls composed a set for ritualized consumption of wine.¹⁵⁸ The deposition of metal drinking set in tombs, so frequently attested, seem to demonstrate the close conjunction between the act of drinking or libating and funerary rituals and also had strong social value denoting the high social status of the owners.¹⁵⁹

Spoons (A. Cellerino)

The spoons nos 47-48/SO43, SO62 were discovered respectively on the east bench (SU29) and in the layer (SU32) that filled the space between the three benches of the main chamber of T23. These spoons belong to a well-known and typical Roman standard eating implement called cochlear, cochlearium or cochleare.¹⁶⁰

The cochlearia are small spoons with a long sharpened and pointed handle. Made in bone, metal (bronze or silver), glass, albeit rarely, and wood, they are manufactured in a wide variety of shapes from plain to elaborately designed. They are classified into a number of variants depending on the shape of the bowl (round, oval or pear-shaped, bag-shaped) as well as on the design of the connection between bowl and handle (bowl in the same plane as the handle or offset bowl).¹⁶¹ The cochlear is supposed to have been used for eating shellfish, snail and eggs, the point of the handle used to pierce the eggshells, to extract the contents or to pick up the food as an alternative to the point of a knife.¹⁶²

¹⁵³ Moorey 1980a, 29.

¹⁵⁴ On the metal bowls see e.g. Lushey 1939; Howes-Smith 1986; Sciacca 2005.

¹⁵⁵ See e.g. the necropolis of Dura Europos (Toll 1946) or the excavated tombs in Uruk (Boehmer et al. 1995) and Susa (Boucharlat, Haerincq 2011).

¹⁵⁶ Moorey 1980b, 183-188, 195-196; Simpson 2005.

¹⁵⁷ Moorey 1980b; Stronach 1995.

¹⁵⁸ 'Service beim kultischen Weintrinken' (Buchholz 2001, 108). Examples of metal 'wine services' have been found in Egypt and Israel for the late Bronze Age and the early Iron Age and consist of a jug, a filter and a small bowl (Gershuny 1985, 46-47, pls 17-18; Dayagi-Mendels 1999, 55). The existence of such groups of vessels, also in pottery, for the consumption of wine, is testified since the ancient Bronze Age within funerary contexts in Anatolia, for example in the site of Kultepe, and in the Levant. Given the context, it is possible that these particular vessels were used also in ritual consumption of some kinds of liquid during the funeral ceremony (Reeves 2003, 138-139, 143).

¹⁵⁹ Feldman 2014, 119-126; Hunt 2015, 186; Cellerino 2021.

¹⁶⁰ Spoons are a well known roman cutlery preserved in large number and extensively studied, see for example: Saglio 1887, 1266; Riha, Stern 1982; Johns 2010; Swift 2014.

¹⁶¹ Another basic type of spoon is the ligula. Usually larger than cochlear, the ligula was characterised by a larger bowl often oval-shaped and a handle normally ending in a rounded decorative knob or an animal head. The handle is much shorter in relation to the bowl than in the cochlearia (Riha, Stern 1982, 10; Swift 2014, 205).

¹⁶² Johns 2010, 98; Swift 2014, 230-233.

It cannot be ruled out that small spoons were also used for secondary purposes, such as measuring small quantities of ingredients in food preparation or substances in medical practice for preparing and administering medicines, how is also demonstrated by the term 'spoonful' mentioned in Roman medical texts, but their essential primary purpose was undoubtedly to serve as eating utensils as suggested by their contextual associations.¹⁶³ The correlation of cochlearia with dining is attested both by contemporary literary sources¹⁶⁴ and their presence in many metal tableware services such as those found at Pompeii¹⁶⁵ and in Roman hoards discovered in many regions of the Empire.¹⁶⁶

Cochlearia are already known from the 1st century BCE.¹⁶⁷ In the early 1st century CE the usual type of spoon is the small round bowled cochlear. In the same decades a spoon with an oval shaped bowl also begins to appear.¹⁶⁸ During the 2nd century CE these two types of cochlearia, with the handle in the same plane of the bowl, continue to be produced. A more massive round bowled spoon, decorated with an incised line around the interior of the rim, can also be dated to this span of time.¹⁶⁹

Spoons in wood, shell, clay and stone have been used as utensils for preparing, serving, eating food and many other purposes from Prehistoric times¹⁷⁰ even if also bread may have been commonly used as a form of edible serving plate as well as a convenient spoon.¹⁷¹ In ancient Near East they were used also for cosmetic preparation and in religious and ritual ceremonies or as a votive gifts.¹⁷² Spoons found in Neo-Assyrian sites are rare.¹⁷³ A bronze spoon with an oval bowls and a long handle decorated by a series of ribbings was found at Khorsabad¹⁷⁴ and a bone spoon came from the South West Palace at Nineveh.¹⁷⁵ An extraordinary composite multi-material (stone, ivory and metal) spoon was found in a well discovered in courtyard AJ of the North West Palace at Nimrud. The spoon, now in the Iraq Museum, has an oval, slightly flat bowl gripped by the jaws of a dragon that forms the attachment for the handle.¹⁷⁶ The latter is in form of a man's bust. The figure is carved in the round, with the hand clasped on the chest. He wears a cylindrical crown similar to the Assyrian royal crown. At the same royal context belong two wooden spoons¹⁷⁷ with oval bowl and decorated broken handles placed as grave gifts in Coffin 3 of the Royal Tomb III,¹⁷⁸ one of the four tombs of Neo-Assyrian royal women discovered underneath the domestic area of the North West Palace.

In Greece in the first half of the 1st millennium BCE ivory, bronze and silver spoons appear in sanctuaries, probably used in rituals. They show a strong Egyptian influence in the motifs decorating the extremity of the handle that usually consists of a small loop with a swan or duck head finial.¹⁷⁹ To this characteristic type belong a small numbers of silver spoons probably used at the royal table dated to the Late Achaemenid period attested, for example, in the Treasure of Pasargadae¹⁸⁰ or the 4th century BCE silver spoon found, with other vessels and luxury objects for royal banquets, in the tomb of Philip II at Aigai/Verghina.¹⁸¹ The presence of bronze spoons found at Nimrud and dated to the

¹⁶³ Riha, Stern 1982, 10; Cool 2004, 28; Swift 2014, 206-207.

¹⁶⁴ Saglio 1887, 1266.

¹⁶⁵ See e.g. Pirzio Biroli Stefanelli 1991a; Guzzo 2006; Sarnataro 2010/2011.

¹⁶⁶ See e.g. Johns 2010 on the extraordinary Hoxne Hoard discovered in 1992 in the village of Hoxne in Suffolk and now in the British Museum.

¹⁶⁷ See e.g. the silver cochlearia belonging to the late Republican Tivoli Hoard now in the Metropolitan Museum of Art (Pirzio Biroli Stefanelli 1991a).

¹⁶⁸ Riha, Stern 1982, 24, 34-35; Swift 2014, 205. Early cochlearia, oval or rounded bowled, have bowl and handle on the same plan. Gradually a step evolved between bowl and handle, and only in the 4th century CE this offset became a distinctive feature (Johns 2010, 100).

¹⁶⁹ Riha, Stern 1982, 24, 34-35; Swift 2014, 205-206.

¹⁷⁰ Zimi 1997, 209-211.

¹⁷¹ Simpson 2005, 110.

¹⁷² Bleibtreu 1987-1990, 75-77.

¹⁷³ A particular type of spoon is the so-called pierced 'spoon-stopper' or 'hand/lion bowl', made in ivory and rarely in stone, that was fitted into the mouth of a container. The perfume or ointment flowed through the hole from the container to the small bowl (see e.g. Scigliuzzo 2004; Herrmann, Laidlaw 2009).

¹⁷⁴ Curtis 2013, 74, pl. XLI: 529.

¹⁷⁵ Barnett, Davis 1975, pl. CXXV: 13.

¹⁷⁶ Iraq Museum, inventory no. IM 79601, total length ca. 13 cm (Oates, Oates 2001, fig. 61).

¹⁷⁷ Hussein 2016, 41, excavation nos ND 1989.495, ND 1989.496, 154-155.

¹⁷⁸ On the Royal tombs see e.g. Damerji, 1998, 1-84; Hussein, Suleiman, 2000; Oates, Oates, 2001, 78-90; Hussein 2016.

¹⁷⁹ Zimi 1997, 212.

¹⁸⁰ The silver spoon with a double curved handle terminating in a duck' or swan's head was found with another silver spoon with a zoomorphic handle in the Pasargadae Treasure (Stronach 1978, 169, 176-177, 203, fig. 86: 5-6, pl. 150: b, pl. 151: a-c; Zimi 1997, 215-216; Simpson 2005, 110). The duck headed spoon is probably dated to the latter 5th century or to the 4th century BCE.

¹⁸¹ Zimi 1997, 214; Kottaridi 2011, no. 234, 103-104.

Hellenistic and Parthian period is attested by Curtis.¹⁸² Even the spoons from Nimrud, unpublished, seem to display the long-lasting tradition of handles with zoomorphic decorations.

Although the cochlearia from T23 may be dated to the late Parthian period (50-225 CE), probably to the beginning of the 1st century CE on the basis of the associated pottery, they do not belong to the just described Hellenistic and Near Eastern class but to the contemporary Western Roman types. It is noteworthy that no Roman spoons are attested among the grave goods in the necropolis of Dura Europos, even if some imported items, such as a number of glass vessels, are present in some tombs.¹⁸³ Even if it is very difficult to identify a precise origin, the two cochlearia can be considered an eastern Mediterranean import, probably traded along the great road from Roman Syria to Iran. The presence of these objects within a wealthy family tomb implies that they were esteemed personal possessions, likely regarded as prestigious items influenced by Roman cultural norms. This suggests they symbolised the status and affluence of the deceased rather than serving as ordinary everyday utensils.

Glass vessels (A. Cellerino)

The blown glass perfume or ointment bottles nos 49-50/SO79-80, almost identical in size, manufacture and fabric, were discovered respectively in Gr2 and Gr3, two cist graves made with square bricks containing each the body of a child.

The advent of glassblowing technique in the Syro-Palestinian area in the late 1st century BCE was a real revolution in glassmaking industry of the late Hellenistic-Roman period.¹⁸⁴ The new technique, allowing the reduction of technical working time, increased the possibility to create a great variety of containers of any shape and size in a short time. The new process rapidly spread and blown glass vessels, mass produced and standardised, were no more a luxury item reserved for the elites, but became a cheaper product affordable for a much larger part of the population, which over time eventually replaced the more expensive and exclusive alabaster containers.¹⁸⁵

Political and economic factors as the Roman conquest of the oriental Hellenistic kingdoms combined with specialisation and refinement of blowing technique contributed to the spread of glass objects in the Roman and contemporary Parthian world, up to their exceptional diffusion on western and eastern markets during the 1st century CE.¹⁸⁶ The perfume bottle (formerly known as unguentarium or balsamarium) is the most widespread and common glass vessel type throughout the Roman Empire and beyond and is represented in Syro-Mesopotamian regions¹⁸⁷ by a wide range of variants. The class remained popular from the 1st century CE to the 5th century CE or even later.¹⁸⁸

Coloured glass containers, especially blue, are preferred in the first periods of production, but around the middle of the 1st century CE and even more in the following centuries, transparent, uncoloured or pale greyish-green glass prevail. The industrialised production of perfume and ointment containers was characterised by a common formal language based on the replication of simple schematic forms showing conical-trunk, bulbous or pear-shaped body, becoming very flat over time, and a long or very long neck appropriated to reduce the contamination and evaporation of the content.¹⁸⁹ The conventional and very common use of the small bottles as containers of perfumed oils, probably acquired in bulk by the perfumers' workshops,¹⁹⁰ led to an inaccurate and coarse production. As the bottles were made and circulated both within and outside the Roman frontiers, it is very difficult to establish the possible centres of production, as different features may be combined.¹⁹¹

¹⁸² Curtis 2013, 74.

¹⁸³ Clairmont 1963, 148-149.

¹⁸⁴ Stern, Schlick-Nolte 1994, 81-86.

¹⁸⁵ Grossmann 2002, 10.

¹⁸⁶ Hayes 1975, 29-30.

¹⁸⁷ See e.g. the glass containers from Seleucia on the Tigris (Negro Ponzi 2002, 88-93).

¹⁸⁸ Harden 1936, 265.

¹⁸⁹ Hayes 1975, 42-43.

¹⁹⁰ Lightfoot 2017, 17.

¹⁹¹ Negro Ponzi 2002, 90.

The two perfume bottles from Kal-e Chendar can be attributed to the general Roman type Isings 82.B (1),¹⁹² formed by bottles with pear-shaped body and long neck, dated from the 1st to the 4th century CE, very common in the Roman provinces and the frontier kingdoms. The glass colour and the body-neck proportion point to a probably Mesopotamian origin. Indeed, the glass colour range of the Mesopotamian fabrics of the 1st-3rd centuries CE was the natural-coloured pale blue or pale green with a lighter or deeper yellowish tinge in contrast with those of the Syro-Palestinian area made of brightly coloured glass.¹⁹³ The bottles from Gr2 and Gr3 find parallels in the productions of Seleucia on the Tigris especially with the balsamaria classified by Negro Ponzi as Type II,¹⁹⁴ for the shape of the body, and Type IV, for the very tall flaring neck.¹⁹⁵ In both cases the bottles were found in Parthian levels I and II of the Italian excavation in the Porticoed Street area dated to the end of the 1st and the 2nd century CE,¹⁹⁶ but in Mesopotamia the types continued in the early Sasanian periods.¹⁹⁷ A suggestion for the dating of the two balsamaria can be offered by the pottery deposited in Gr2, which based on comparative analysis can be attributed to the 1st century CE.¹⁹⁸ The type with long neck and more or less expanded body is also present in the Roman Syro-Palestinian production of the 2nd century CE¹⁹⁹ and has been found in a number of tombs and dwelling areas at Dura Europos.²⁰⁰ In particular, Clairmont Type I²⁰¹ is closely related to the small perfume bottles found in Seleucia and may belong to imported vessels from Mesopotamia or to local products of Mesopotamian glass types.²⁰² Type I balsamaria, similar to those from Kal-e Chendar but slightly smaller,²⁰³ were found in Tombs 7, 46, 55 dated by Toll to the late 1st century until the end of the 2nd century CE.²⁰⁴

The existence in Dura Europos and Seleucia of eastern and western types marketed by different production centres shows that glass perfume bottles circulated in the Parthian period throughout the Roman Syrian, Parthian Mesopotamian and Iranian trading system in concomitance of international trade of perfumed substances, despite the various cultural and political situations of the different regions. Clairmont divided the eastern system of glass production as an 'East Syrian-Mesopotamian koine' and a 'West Syrian-Egyptian' tradition, which have in part different classes of shape and fabric, and he supposed that the East Syrian-Mesopotamian glassware was probably produced in Mesopotamia.²⁰⁵

Glass vessels were found in a relatively small number of tombs both in Dura Europos, where glass containers, for the most part balsamaria, were brought to light only in 14 tombs of the Necropolis,²⁰⁶ and Seleucia, where glass vessels were found during Italian excavations in 9 tombs out of a total of 46 in the Porticoed Street and Archives areas, representing ca. 15% of the graves and 2% of the total number of the glass fragments recovered²⁰⁷ and in only 10 out of 279 tombs, representing less than 3% of the total, excavated in the areas of the city investigated in the thirties by the American team.²⁰⁸

As attested by the eastern glass findings in Dura Europos and Seleucia, glass vessels did not occur in graves until the 1st century CE and even in the Middle Roman Imperial period (2nd-3rd century CE) the graves contained a small amount of glass vessels consisting mostly of perfume bottles. It is possible, however, that perfume bottles of irregular shape and careless manufacture were specifically

¹⁹² Isings 1957, 97-99.

¹⁹³ Negro Ponzi 2002, 92.

¹⁹⁴ Negro Ponzi 2002, 82-84, fig. 3: 17-18.

¹⁹⁵ Negro Ponzi 2002, 86-87, fig. 3: 14; fig. 6: 7.

¹⁹⁶ Negro Ponzi 2002, 66, tab. I.

¹⁹⁷ Negro Ponzi 2002, 81.

¹⁹⁸ See chapters 7 and 11.

¹⁹⁹ Hayes 1975, 70, no. 227, fig. 8: 227, pl. 17: 227; 71-72, no. 235, pl. 16: 235.

²⁰⁰ Clairmont 1963, 130.

²⁰¹ Clairmont 1963, nos 722, 724, 138-139 (= Toll 1946, Tomb 7, pl. XXXVIII, bottom row, second and fourth from left); no. 723, 139 (= Toll 1946, Tomb 55, pl. LX, bottom row, fifth from left); no. 726, 139, pl. XXXVI (= Toll 1946, Tomb 46, pl. XXXVI, bottom row, third from left).

²⁰² Negro Ponzi 2002, 92.

²⁰³ Clairmont 1963, 138-139, no. 722, H. ca. 8 cm; no. 723, H. 9.7 cm; no. 724, H. 8.9 cm; no. 726, H. 9.7 cm.

²⁰⁴ Toll 1946, 132-138, and Chronological Table, 139.

²⁰⁵ Clairmont 1963, 3-4.

²⁰⁶ Toll 1946, 112.

²⁰⁷ Negro Ponzi 2002, 70.

²⁰⁸ Pestle 1999, 42.

made for use in the contexts of funeral rites or as funerary gifts²⁰⁹ and bought directly not only from a glass workshop, but also from the producer of the perfumed substances.²¹⁰ Clairmont supposed that this lack may be due either to economic factors or to burial customs, and both hypotheses might also be true for the Seleucia's graves.²¹¹

Stone vessel (A. Cellerino)

The fragmentary stone vessel no. 51/SO39, probably made in gypsum alabaster, found with many pottery sherds in the layer filling the space between the walls SU2 and SU3 of the corridor of T23, belongs to a well-known class of stone cosmetic container, the so-called alabastra, of Egyptian origin. The Greek name is clearly related to the material from which the containers had been made. In archaeological literature, however, the term 'alabaster' can indicate both the 'Egyptian alabaster' or 'calcite-alabaster', a crystalline fine-grained aggregate of calcium carbonate and the mineral gypsum, a fine-grained sedimentary rock that is an aggregate of gypsum, much easier to work.²¹²

An Egyptian production for calcite vessels is generally accepted by scholars,²¹³ although an export of the raw stone material from Egypt to the Mediterranean and the Levant cannot be excluded.²¹⁴ The main calcite quarries are in fact located along the Nile valley although some deposits, which probably were not exploited until the Hellenistic era, can also be found in other areas of the Near East.²¹⁵ Alabastra made of Egyptian calcite appear in Egypt in the second half of the 8th century BCE²¹⁶ and spread over a wide area that includes the Mediterranean and the Near East at least from the beginnings of the 7th century BCE, as attested by the findings of inscribed Egyptian alabastra found in the Neo-Assyrian palaces, especially the South West Palace of Nineveh,²¹⁷ to the late Hellenistic age until the 1st century CE and probably later.²¹⁸ Along with calcite containers of Egyptian import or, at least in some cases, Levantine origin, a production that exploits the local deposits of gypsum as the native alabaster of North Iraq,²¹⁹ is testified in the Near East.

Alabastra had a wide diffusion across the Mediterranean region and beyond²²⁰ also because of the precious perfumed substances they contained, since the alabaster (calcite) in particular, was considered particularly suitable for preserving the precious contents from deterioration,²²¹ stimulating the production in a multitude of regional workshops of a series of imitations and variations in local stones, such as the gypsum of the Cypriot alabastra or in clay, metal and, from the 5th century BCE, in core formed glass.²²²

From the last centuries of the 1st millennium BCE, the use of these elegant containers was no longer confined to the elites. In the Hellenistic period they became a diffused factory-made product and each workshop was probably responsible for different peculiarities,²²³ even if, over time, they were gradually replaced by glass blown perfumed bottles, cheaper and faster to produce. They show similar characteristics: elongated ovoid body with rounded or slightly flattened base, large disc-shaped rim and small lateral lugs.²²⁴ The morphology remained almost unchanged down the early Hellenistic period; then, the shape became more elongated, the vertical lugs disappeared, and the disc-shaped

²⁰⁹ Lightfoot 2017, 16, 187.

²¹⁰ Lightfoot suggests that the perfume bottle may have been bought also 'from the organiser of the funeral' (Lightfoot 2017, 17).

²¹¹ Clairmont 1963, 146.

²¹² See e.g. Aston 1994, 47-51; Aston et al., 2000; Klemm, Klemm 2008, 147-166; Masson 2015, 3-5.

²¹³ Contra Lilyquist 1996.

²¹⁴ Cavallo 2004, 240; Sparks 2007, 159-160.

²¹⁵ Köster 2012, 228, fig. 2; Squitieri 2017, 35, 82.

²¹⁶ Aston 1994.

²¹⁷ Searight et al. 2008, 21-23.

²¹⁸ Finkel, Reade 2002, 32-34; Masson 2008, 5.

²¹⁹ Finkel, Reade 2002, 31.

²²⁰ von Bissing 1939; 1940.

²²¹ Plin., Nat. Hist. XIII, 19; XXXVI, 60.

²²² On alabastra and their uses see e.g. Badinou 2003; Algrain et al. 2008, 152-157.

²²³ Finkel, Reade 2002, 34.

²²⁴ See e.g. Aston 1994, 166, nos. 227-229; Searight et al. 2008, 21-42, figs 15-17.

rim was replaced by an everted rim, triangular in section, or by plain rim and neck with a central ridge.²²⁵

Along with calcite containers of Egyptian import or, at least in some cases, Levantine workmanship, a production exploiting the local deposits of gypsum alabaster is testified at Babylon where Koldewey found an alabastra workshop²²⁶ located in the south-eastern area of the Southern Palace.

The fragmentary vessel from T23 belongs to the late type of alabastra, all without lugs, with cylindrical body. This shape tends to be typical of the late Hellenistic-Parthian type²²⁷ and the found examples are dated from the mid-2nd century BCE to the 1st century CE.²²⁸ General comparisons can be found with the alabastra²²⁹ coming from the Temple Antérieur of Majid-e Sulayman dated to the Seleucid period,²³⁰ in particular with the larger version of these vessels.²³¹ A number of such containers have also been found in Uruk, in the Hellenistic levels of the Irigal temple. They are considered probably of local manufacture rather than Egyptian imports.²³² It is noteworthy that these Mesopotamian alabastra have been found in temples dedicated to female deities (Ishtar at Uruk and Athena Hyppia at Majid-e Sulayman),²³³ as happens in Attica where many have been discovered on the Acropolis of Athens, in the sanctuary of Artemis at Brauron and Demeter and Kore at Eleusis. However, it is not possible to establish whether they are votive offerings or objects used during religious ceremonies.²³⁴

Alabastra were high-profile grave goods²³⁵ still attested in Hellenistic period as demonstrated by the alabastra found in a female grave brought to light by Ghirshman in Susa during the excavation of the Ville des Artisans²³⁶ dated from the 3rd to the first half of 2nd century BCE, probably to the later part of this span of time, and in the Parthian chamber tomb TV 1²³⁷ also located in the same excavation area, probably dated within the 1st-2nd century CE.²³⁸

The alabastra production was linked with the manufacture of the perfumed oils used on various circumstances in daily life but also in ritual or religious occasions as votive or funerary offers. The inscriptions on some containers inform us of their contents: cinnamon oil, sweet marjoram oil, etc.²³⁹ The representations also show that the perfumes were contained in larger containers and then poured into the alabastra which were also found in the perfumer's shop.²⁴⁰

In funerary contexts, the deposition²⁴¹ of these containers, considered a luxury item in itself,²⁴² as grave offerings could have emphasized both the belonging of the deceased to a high social status²⁴³ and the use of precious perfumed substances they contained for the preparation of the body before burial.

²²⁵ von Bissing 1942, 134; Aston 1994, no. 230; Searight et al. 2008, 34-40, figs 18-19.

²²⁶ Koldewey 1914, 72.

²²⁷ Finkel, Reade 2002, 32-33.

²²⁸ Aston 1994, 166; Finkel, Reade 2002, 33.

²²⁹ Ghirshman 1976, pls 48 and CXVIII: 1-3.

²³⁰ Ghirshman 1976, 77.

²³¹ Ghirshman 1976, pl. 48: GMIS. 544.

²³² Strommenger 1967, 40, taf. 52; Lindemeyer, Martin 1993, 103-108, taf. 49-50.

²³³ Ghirshman 1976, 76, 80.

²³⁴ Algrain et al. 2008, 155 and the bibliography cited there.

²³⁵ Köster 2012, 221.

²³⁶ Haerinck 2018, 216-217, pl. 5.

²³⁷ Boucharlat, Haerinck 2011, 61, 73, pl. 11: GS-590, GS-591. The alabastra from TV1 are considered an Achaemenid luxury production preserved for long time or a later imitation of the type.

²³⁸ Boucharlat, Haerinck 2011, 76-77.

²³⁹ Finkel, Reade 2002, 40-45.

²⁴⁰ Algrain et al. 2008, 153.

²⁴¹ Köster 2012, 221.

²⁴² Algrain et al. 2008, 153-154.

²⁴³ Colivicchi 1997, 246; Cavallo 2004, 244-248; Pace 2019, 220.

9.2.4 Utensils

Pestles (E. Foietta)

Four pestles (nos 52-55/SO36, SO74, SO75, SO99) were found in Tr1 and Tr8. They are all cylindrical in shape with a circular or oval cross-section (\varnothing 6-7.1 cm). The best-preserved one (no. 52/SO36) is 15.2 cm in height overall and was originally slightly taller. Similar tools are widespread diachronically in the Iranian Plateau and the Near East, from the Prehistoric to the Islamic periods, especially discovered in the settled areas.²⁴⁴ The specimens all come from the Upper Terrace in archaeological layers related to the opened trenches testifying also a productive function in the area.

Stone tool (E. Foietta)

The limestone fragment no. 56/SO98 was found in layer SU7, positioned against the east façade of wall SU4 in Tr1. This discovery stands out as one of the limited artefacts recovered on the Upper Terrace. The fragment displays a gently curved profile and an oval section. Its surface is partially worn and encrusted. Presently, the true intended function of this stone tool remains unidentified.

Metal Blades (E. Foietta)

Five fragments of medium-small iron blades were discovered at Kal-e Chendar (nos 57-61/SO64 SO04, SO05, SO06, SO07). The knife no. 57/SO64 is the best-preserved, with a length of 9.8 cm, including the handle and blade. All these metallic objects come from the tombs T7 and T23. It is possible to hypothesise that some fragments nos 57-60/SO4, SO5, SO6, SO7 from T7 belonged together to one or more knives. Blades and small knives are frequent findings within burials of different periods in the Near and Middle East, and they often provide indirect indications of the gender of the buried individual, similar to swords and other distinctive objects. During the Hellenistic and Parthian periods, the discovery of iron knives in Susa, along with chicken bones, eggshells, and animal remains, led Ghirshman to speculate that rituals involving the consumption of food and liquids took place within the tombs.²⁴⁵ This assessment, in particular, was suggested for Tomb V of the Ville des Artisans. In the case of T23, the presence of a knife inside it, along with remains of small animals in the side niches, could suggest a similar practice, perhaps with rituals conducted between the chamber and the corridor.

Metal Nails (E. Foietta)

In total, 13 iron nails or nail fragments were discovered at the site (nos 62-74/SO01-03, SO08/SO47-54, SO100). They all exhibit medium or small dimensions, a quadrangular section, and based on their respective characteristics, they can be interpreted as wooden nails. The majority of these metallic objects came from T23 and were recovered on the benches cleared in it. It is possible to suggest that they were used to hold together different parts of wooden boxes or the planks of a wooden sarcophagus. Similar nails are widespread in numerous Seleucid and Parthian archaeological sites.

9.2.5 Sculptures (I. Bucci)

The stone sculptures presented in the catalogue include two fragments originally belonging to statues (nos 75-76/SS01, SS02), two betyls (nos 78-79/SO96, SO101), an uncertain object that is possibly another betyl or a base (no. 77/SO95), and a censer (no. 80/SO94).

The first fragment (no. 75/SS01) (length 5.6 cm) pictures a human eye and represents what remains of a life-size statue or relief otherwise unknown. It schematically reproduces the eyeball and lids and the lacrimal caruncle, that allows to identify the eye as left. The iris is rendered by a very thin line while

²⁴⁴ For an overview about this class of materials: Squitieri, Eitam 2019. For Qasr-i Abu Nasr: Whitcomb 1985, 176-177, fig. 68, c-i.

²⁴⁵ Boucharlat, Haerinck 2011, 35. Cfr. with an iron knife belonging to the layer 3B (Parthian) of the Ville Royale II from Susa (de Miroshedji 1987, 50-51, fig. 31: 7).

the pupil is not described, given the impression of an ‘empty eye’. For its style, it generally resembles the male stone head accidentally discovered at the site and seen by Stein at Izeh-Malamir,²⁴⁶ as well as some of the Parthian sculptures from Susa²⁴⁷ and the sanctuaries of Bard-e Neshandeh²⁴⁸ and Majid-e Sulayman.²⁴⁹

The second fragment (no. 76/SS02) is from a free-standing statue smaller than life-size and portrays the lower part of a draped standing figure, most likely female. The long gown covers the feet completely, which are therefore not sculpted, and it is described by shallow oblique grooves running parallel and creating a softer weaving effect on the front side. The back of the statue is broken in several spots but seems to be coarser than the front, indicating that the statue was probably conceived to be placed against a wall and seen mainly from the front side. The extension of the fragment does not allow to reconstruct the complete attire nor to tell if it is portrayed according to a western or an eastern fashion; it is not unlikely, for instance, that the tunic represented was covered by a thicker upper garment or by a mantle wrapping the figure and reaching the knees. If the shape of the fragment can be compared with the lower part of some Parthian statuettes from Susa,²⁵⁰ the execution is quite rigid and flat, even though the efforts to describe the softness of the fabric can be noticed on the front side.

To the funerary sphere seem to be related the betyls no. 78/SO96 and no. 79/SO101 Tr1 and from Tr13 respectively, and more clearly the censer no. 80/SO94, discovered in the courtyard giving access to T26 and T28. The first (no. 78/SO96, height 26 cm), with an irregular cylindrical body tapering toward the top and a base decorated by a plain band in relief, can be ascribed to an ancient Near Eastern tradition of cultic objects, of which similar examples are also represented in some Elymaean reliefs.²⁵¹ The second (no. 79/SO101, height 78 cm) is an undecorated cylindrical stand with flat flaring bases. Its finding in a filling layer against the roomed building discovered in Tr13 –but originally belonging to the complex of Platform 1 unearthed in the same trench– corroborates the idea that funerary rituals were once performed on this platform.

No. 80/SO94 is a small censer (height 21.5 cm), with a cylindrical shaft terminating in a shallow bowl at the top, decorated by a braided ridge and ending in a lenticular base above a moulded quadrangular block. The fact that no traces of burning have been preserved, might imply that incense or other offerings were actually burnt in a smaller bowl, perhaps made of pottery or metal, placed on the top of the altar.²⁵² An almost identical miniature altar was found by Stein in the area of the shrine unearthed on Terrace 1 (Stein Terrace).²⁵³ It is ca. 20 cm high and its shape is very close to SO94, having a cylindrical body and a quadrangular base similarly decorated. It has a circular shallow bowl on its top as well, presumably to burn incense or essences, although nothing is mentioned about its use or the traces that might have derived from it. The major difference to no. 80/SO94, however, is the second quadrangular element, whose shape and decoration closely recall the base at the bottom, that decorate the body just below the upper bowl.

Portable burners of this type, having a circular shaft and a small recess on the top were widely attested in the Near East in the Roman-Parthian period and close examples may be found in the famous relief at Bisutun (III), depicting King Walgash in the act of making an offering,²⁵⁴ and at sites such as Assur, Hatra, Dura-Europos, and Palmyra.²⁵⁵ Similar altars/censers are also attested in funerary contexts in Roman Syria, especially in the central areas of several communal tombs where they were probably accessible at all times and could be used to make offerings to the gods and/or to the deceased, either individually or collectively as family group and ancestors.²⁵⁶ Both the censers found at Kal-e Chendar

²⁴⁶ Stein 1940, 133-134, fig. 48.

²⁴⁷ Amiet 2001, ill. 10, 33.

²⁴⁸ Ghirshman 1976, pls. XXVII 1-5, XXX 1.

²⁴⁹ Ghirshman 1976, pls. LXXI 5-7, LXXV 1-3, LXXX 1-4.

²⁵⁰ Amiet 2001, ill. 13-16.

²⁵¹ See the reliefs at Tang-e Sarvak I and II (Vanden Berghe 1984, pl. 15; Vanden Berghe, Schippmann 1985, pls 24, 37-38).

²⁵² Foietta 2019, 210. A small bronze vessel that was possibly used for this purpose was found, for instance, in Temple X at Hatra (note 19).

²⁵³ Stein 1940, 148, 154, pl. XXVII/21. The original location of the altar is even marked on the plan (144, plan 11).

²⁵⁴ Vanden Berghe 1984, pl. 11.

²⁵⁵ See Foietta 2019, 213 for further references.

²⁵⁶ de Jong 2017, 152-156, 158.

are of small size, a feature that further enhances their portability. SO94, therefore, could have been brought to the courtyard of T26 and T28 and used during the funeral, but it could also be the proof of post-funeral activities, as people could keep engaging with the deceased after their placement in the burial, especially in the case of communal tombs.²⁵⁷ Unfortunately, we do not know what was the original layout of the courtyard, so it is impossible to establish whether it contained other devices to perform rituals or commemorate the deceased, or SO94 was the only object destined to these functions. At any rate, if the specimen discovered by Stein attests for the existence of this type of artefacts at the site, placing it in what appears to be a religious context on the Upper Terrace, the censer found in the courtyard giving access to T26 and T28 indicates that offerings of incense and other substances were performed as part of funerary practices as well.²⁵⁸

9.2.6 Coins (I. Bucci)

Four bronze coins (nos 81-84/C01-04) were found at Kal-e Chendar and are listed in the catalogue. One of them (C01) is so much corroded that it is now impossible to reconstruct its type, while the others (C02-04) can be identified with some degree of certainty. Unfortunately, however, they mainly come from surface layers, so that the information they provide can only partially contribute to the chronological framework of the excavated areas. The fact that C04 was found on the floor of T28 near its south wall cannot be taken as an accurate chronological indicator. As it does not come from an undisturbed layer, it might well be the case that it was part of the objects placed in the tomb or that it had simply been lost by the robbers entering the tomb in antiquity.

C03-04, most likely two drachms,²⁵⁹ can be both attributed to the issues of the Elymaean-Arsacid dynasty, that was ruling in Elymais probably from the late 1st century BCE until the Sasanians took over the region around 224 CE.²⁶⁰ More precisely, they are part of the bronze coinage (the sole produced in this period) issued between the late 1st century BCE and the early-mid 2nd century CE. With regard to the mint, it seems that the earlier issues were all produced at Seleucia on the Hedyphon, while later issues (starting from the 1st-2nd century CE) were mostly struck at Susa.²⁶¹

Following the classification of the Elymaean coins revised by van't Haaff,²⁶² no. 83/C03 can be recognised as one of the types of a transitional coinage issued between 33/2 BCE and the early 2nd century CE by several rulers who, due to the absence of readable legends, are not individually identified and are therefore named as 'uncertain kings'.²⁶³ In the case of C03, the presence of a dot inside the crescent –the latest in appearance in a sequence of accessory symbols including a rosette, a rosette within a crescent and a star within a crescent– and the degeneration of the reverse, which features only dashes and should be probably to interpreted as an intentional break with the Hellenised character of the previous Elymaean coinage, suggest to date this coin type later in the series (Type 10.4.2-4).²⁶⁴

No. 84/C04, on the other hand, can be attributed to Kamnaskires-Orodes (especially Type 12.2.1-2 and Type 12.3.1-2)²⁶⁵ or perhaps ascribed to the initial ('transitional') issues of Orodes II (Type 13.1), both dated to the early-mid 2nd century CE.²⁶⁶ As the reverse of C04 is illegible due the heavy corrosion of the surface and there is no legend on the obverse, the iconography and style of the image on the obverse are the only elements that can be used to identify the coin type within a wide range of variations. Drachms of the same types as C03-04 were discovered, for instance, in much higher quantities in the sanctuaries of Bard-e Neshandeh and Masjid-e Sulayman.²⁶⁷

²⁵⁷ See de Jong 2017, 158.

²⁵⁸ See chapter 11.

²⁵⁹ It was not possible to weigh the coins on the field, but their size is compatible with that of the drachm denominations of the Elymaean-Arsacid dynasty (See van't Haaff 2007, 158-160).

²⁶⁰ See van't Haaff 2007, 18-28 and the literature quoted there.

²⁶¹ For a synthesis of the problems related to the identification of the mints in Elymais: van't Haaff 2007, 26-28; Salaris 2017, 300-302.

²⁶² On the previous studies on Elymaean coinage see the literature quoted in van't Haaff 2007 and Salaris 2017, 297-324.

²⁶³ van't Haaff 2007, 83-91.

²⁶⁴ Van't Haaff 2007, 19, 88, 91.

²⁶⁵ Van't Haaff 2007, 99, 101-104.

²⁶⁶ Van't Haaff 2007, 106-107

²⁶⁷ Augé et al. 1979, 64-66, 97-99, 102-108, 135, 146-148, pl. 4, nos 19-68, 2488-2489, pl. 14, nos 2000-2044, pl. 15, nos 2062-2223, 2644, pl. 16, nos 2231-2369.

Lastly, in no. 82/C02 the surface of both obverse and reverse is heavily corroded, but on the first it is still possible to recognise a male bust facing left with a pointed beard and a tuft of hair bound by a diadem at the top of the head, together with a crescent and an anchor behind it. Due to the state of preservation of the coin, the identification of its type is very tentative, and the attribution to Types 10 issues ('uncertain kings') remains a speculation. Although this new numismatic evidence from Kal-e Chendar, which is to be added to the few finds that came to light at the time of Stein's explorations,²⁶⁸ does not contribute with many information to our picture, it confirms once more that the site was frequented in the first centuries CE.

9.3 Concluding Remarks (I. Bucci, A. Cellerino, E. Foietta)

The artefacts presented in this chapter were discovered in burials (T7, T20, T23, T26, T27, T28, Gr2, Gr3), in the trenches on the Upper Terrace (Tr1, Tr8), at the north limit of the North Terrace (Tr13), and on surface (e.g. coins nos 81-83/C01-03). Due to the extensive agricultural use of the area leading to a significant deterioration of the archaeological layers on the terraces, the majority of the items originate from tombs. In particular, the largest concentration of objects and pottery vessels was found in T23, the largest at the site, probably containing multiple burials. However, the context of the findings from tombs was also heavily disturbed, and Gr2 (within the complex of T26 and T28) represents the only findspot where both skeletal remains and grave goods were preserved in their primary position.

The study of these objects provides valuable data that allow us to further investigate the cultural milieu of Kal-e Chendar in antiquity and better define its chronology. The 84 artefacts analysed – items of personal adornment, metal and glass containers, tools, sculptural fragments, and coins – testify to a prolonged use of the site, most likely for both religious and funerary purposes. Based on the comparison with dated objects mainly from other Near Eastern sites, they overall cover a time span from the 3rd century BCE to the 2nd century CE. With regard to their function, those brought to light in Tr1 and Tr8 differ from those from the burials and Tr13 for they are eminently tools and utilitarian objects. The general chronology of the artefacts aligns with the results from the study of the pottery (3rd century BCE - 1st century CE).²⁶⁹ Within this wide chronological range, items with different dates appear to reflect different phases in the use of the sanctuary and the cemetery, keeping in mind that some of them (especially luxury goods) could have been treasured for a long time before being deposited. Moreover, not all the artefacts are equally indicative in terms of chronology or artistic milieu, especially tools and small ornaments. Objects such as nails, blades, pestles, beads, and small iron rings have a wide time span and distribution and cannot be precisely dated. All the beads found at Kal-e Chendar, for instance, are part of a long-standing tradition in the Near East and the Classical world and show a strong continuity in terms of both technique and selection of raw materials.

The assemblage discovered in T23 is the largest and most outstanding at the site. It includes 37 out of 84 items and most of the golden ones. Results of the excavations in the tomb indicated a long use of the tomb itself, which possibly lasted for a few centuries between 2nd century BCE and the first half of the 1st century CE. Among the grave goods, we were able to identify objects that could have been imported from the Roman world, such as the bronze cochlearia nos 47-48/SO43, SO62) and the bronze spatula no. 38/SO63). The concurrent presence of the golden decorated diadem no. 1/SO57, mirror no. 37/SO65, and the spatula no. 38/SO63, possibly used for the preparation and application of cosmetics, together with that of the fragmentary alabastron no. 51/SO39, discovered in the corridor leading to the chamber, also suggests that one or more aristocratic women were buried there. Despite the poor preservation of the archaeological layers inside the tomb as a result of the extensive looting over the centuries, the context of T23 offers invaluable data for the understanding of the local social milieu and funerary practices.²⁷⁰ The array of objects found testifies to a wide international network

²⁶⁸ Stein 1940, 154-155. The author mentions a coin minted in a Greek city in Mesopotamia, dated by J. Allan to the 1st century BCE, and a silver coin of Alexander that, according to the same expert, should be ascribed to the issues from Southern Asia Minor of the late 3rd-2nd century BCE.

²⁶⁹ See chapter 7.

²⁷⁰ See chapter 11.

connecting the ancient settlement of Kal-e Chendar not only with Western Iran and Mesopotamia, but also with the broader area of the Near East and the Eastern Mediterranean.

Another funerary chamber that contributes significantly to the contextualisation of the material culture at Kal-e Chendar is T7, located west of Terrace 3. Although almost entirely looted before the investigations began, a few remarkable objects were discovered at this location. Among them, a small glazed Mesopotamian amphora²⁷¹ and a bronze hairpin with a figurative decorated head depicting a divine couple (no. 35/SO16) indicate a date between the end of the 3rd-beginning of the 2nd century BCE and the first half of the 1st century CE. The presence of the hairpin and of beads originally belonging to necklaces or bracelets (nos 11, 13-14, 18-21) also confirms the presence of at least one female burial.

The last noticeable context to consider is that of T26 and T28. The complex, located east of the modern road, is arranged around a small open court and includes two main chambers and two burials of children, placed on one side of the court and inside T28 respectively (Gr2, Gr3). Unfortunately heavily pillaged, the complex most likely hosted wealthy burials and saw the performance of funerary rites also involving the offering of substances on small altars such as no. 80/SO94), found in the filling of the court. With regard to the chronology of this complex, the findings seem to point to a slightly later date than the other burials excavated. The discovery of coin no. 84/C04 in T28, dating to the early/mid-2nd century CE, and of two glass perfume bottles in Gr2 and Gr3 (nos 49-50/SO79-SO80), dating from the late 1st century CE to the late 2nd century CE, indicates a general chronology to the 1st-2nd century CE. The findings in Gr2 and Gr3, especially the perfume bottles nos 49-50, show that these two burials most likely shared the same archaeological context and date. Thanks to its location under the floor of the court in front of T28, Gr2 went unnoticed by the looters and preserves therefore the complete skeletal remains of a child, the glass perfume bottle no. 49, and a ceramic feeding bottle probably dated to the 1st century CE.²⁷² Together, these objects give us a glimpse of the composition of the funerary goods in children burials of this period at the site. Furthermore, the possibility that familial relationships existed among the individuals buried in the complex adds a new element to our understanding of the local social and funerary practices.

Many of the objects unearthed at Kal-e Chendar reveal a strong influence of Hellenistic traditions. This can be seen in the style as much as in the craftsmanship of many of the artefacts examined. Their analysis hence encourages to speculate the existence of local workshops capable of imparting Hellenistic forms and models, alongside the acquisition of imported items. The items in this chapter, together with the life-size statues and the pottery found at the site, reflect a prominently Hellenised material culture and are evidence of a broad international network of intersecting cultural and artistic influences connecting ancient Kal-e Chendar with the rest of the Near East and with the Mediterranean.

9.4 Catalogue (I. Bucci, A. Cellerino, E. Foietta)

Diadem

1/SO57 (Fig. 9.1)

Pediment-shaped diadem

Tomb 23a, SU32

Gold; length 14.2 cm, width 3.9-6.1 cm (middle), thickness 0.01 cm

Fragmentary gold diadem with embossed decoration; thin sheet of metal with rounded corners and central rounded protrusion, perforated at the ends for attachment (only one hole remains). Floral decoration composed by a central palm branch (?) flanked by two smaller branches or palmettes at its base and by vegetable scrolls displaying three main tendrils from which a fourth smaller tendril originates. Six floral motifs in the shape of two diverging spirals on both sides of a central linear

²⁷¹ See chapter 7, Fig. 7.31: 26.

²⁷² See chapter 7, Fig. 7.31: 28.

element, perhaps representing buds, sprout from the scrolls and from the lower border of the diadem. A vertical sequence of three of these motifs is also located between the first and second main tendrils, while a similar sequence of two is placed on the top of the minor tendril. The design is very irregular but presumably symmetric; most likely made by free-hand repoussé instead of using one or more dies. Irregularly cut perimeter, not decorated. Left half damaged at the base of the central protrusion, right half largely missing.

Cellerino, Foietta 2020, 59, fig. 7a.

Mouth coverings

2/SO58 (Fig. 9.1)

Mouth covering

Tomb 23a, SU32

Gold; length 9 cm, width 4.2 cm, thickness 0.01 cm

Lozenge-shaped mouth covering; thin sheet of metal perforated at the either end for attachment; the sheet is curved and hammered into a mouth design featuring closed lips; three sharp ridges, embossed from the inside of the sheet, delimit the outer and inner outline of the lips. Irregularly cut perimeter, not decorated; slightly worn at both lateral ends and bent in the lower left part.

Cellerino, Foietta 2020, 59-60, fig. 7b.

3/SO59 (Fig. 9.1)

Mouth covering

Tomb 23a, SU 20 on bench SU28

Gold; length 7.9 cm, width 3.5 cm, thickness 0.01 cm

Oval-shaped mouth covering; thin sheet of metal perforated at the either end for attachment; the sheet is now slightly deformed due to its conservation and bent in four places. Simple geometric repoussé decoration: three stylised rosettes, the central one bigger than the other two, are surrounded by small tendrils all around the edge of the sheet. Larger tendrils or spirals seem to be located at both lateral ends. The centre of each rosette (except the left one) is rendered by an embossed dot encircled by a plain ridge; embossed dots are also irregularly distributed inside and between the petals. The design of the flowers is so cursive that the six (?) petals are barely identifiable. Their shape varies from elongated to triangular and suggests, especially in the smaller rosettes, that they may reproduce a different design (a star perhaps?) where a series of triangles are inscribed inside a circle with their vertexes converging toward the centre. Irregularly cut perimeter, not decorated; sheet deformed and damaged in several spots; large hole in one of the lateral rosettes.

Cellerino, Foietta 2020, 59-60, fig. 7c.

4/SO81 (Fig. 9.1)

Mouth covering (?)

Tomb 28, on the floor of the tomb (SU31815)

Gold; length 4.2 cm, width 3 cm

Fragmentary elongated thin sheet of gold with tapering ends; repoussé decoration featuring an egg-and-dart pattern around the edge. The inner space seems to be void of decorations. The object is very fragmentary but what remains suggests it could have been a mouth covering. Severely damaged, surface worn.

Gold Sheet Fragments

5/SO42 (Fig. 9.1)

Gold sheet fragment

Tomb 23a, SU30

Gold; length 1.3 cm, thickness 0.1 cm

Small gold sheet fragment; folded and dented. The original shape and purpose are not determinable.

6/SO60 (Fig. 9.1)

Three gold sheet fragments

Tomb 23a, SU32

Gold; (1st fragment) length 2 cm, width 0.9 cm, thickness 0.7 cm; (2nd fragment) length 0.9 cm, width 0.6 cm, thickness 0.8 cm; (3rd fragment) length 1.3 cm, width 0.3, thickness 0.3 cm

Gold sheet fragments; folded many times and dented. They may be part of the same object, but the original shape and purpose are not determinable.

7/SO68 (Fig. 9.1)

Gold sheet fragment

Tomb 23a, SU20 on bench SU29

Gold; length 2.2 cm, width 1.7 cm, thickness 0.5 cm

Gold sheet fragment; folded many times and dented. The original shape and purpose are not determinable.

8/SO69 (Fig. 9.1)

Gold sheet fragment

Tomb 23a, SU20 on bench SU28

Gold; length 3 cm, width 0.9 cm, thickness 0.7 cm

Gold sheet fragment; folded many times and dented. The original shape and purpose are not determinable, but the presence of a small hole suggests that originally it was probably sewn to a fabric or otherwise applied to the body of the deceased or another surface.

9/SO70 (Fig. 9.1)

Gold sheet fragment

Tomb 23a, SU20 on bench SU27

Gold; length 1.3 cm, width 0.7 cm, thickness 0.4 cm

Gold sheet fragment; folded many times and dented. The original shape and purpose are not determinable.

10/SO82 (Fig. 9.1)

Gold sheet fragment

Tomb 28, on the top of Grave 3

Gold; length 3 cm, width 2.8 cm

Gold sheet fragment; folded many times and dented. The original shape and purpose are not determinable.

Beads and pendants

11/SO10 (Fig. 9.1)

Pendant

Tomb 7

Gold; diameter 0.6 cm, thickness 0.1, hoop diameter 0.3 cm

Hollow pendant in the form of a pomegranate; fruit composed by two semi-spheres, the lower one ending in the calyx. The hoop is made of a thin rectangular lamina bordered by two plain ridges and inserted through a hole in the upper semi-sphere for suspension. The pendant is slightly deformed, causing the disjunction of the two semi-spheres; the calyx shows signs of wear.

12/SO88 (Fig. 9.1)

Bead

Tomb 27, SU32710

Carnelian; diameter 0.8-0.9 cm, perforation diameter 0.1 cm

Spherical bead in carnelian; orange. Polished surface; slightly worn.

13/SO09 (Fig. 9.1)

Bead

Tomb 7

Orange banded agate; length 1 cm, diameter 1.1 cm, perforation diameter 0.1 cm

Hexagonal faceted bicone bead; light orange with darker and lighter bands. Polished surface; slightly worn.

14/SO12 (Fig. 9.1)

Bead

Tomb 7

Orange banded agate; length 1.7 cm, diameter 0.5-1 cm, perforation diameter 0.1 cm

Drop-shaped bead; orange with bands gradually darker toward the bottom; upper part pierced for suspension; top of the bead flat. Polished surface; slightly worn.

15/SO40 (Fig. 9.1)

Bead

Tomb 23a, SU30

Orange banded agate; length 2.3, diameter 0.9 cm, perforation diameter 0.1 cm

Barrel-shaped bead perforated lengthwise; dark orange-red colour. Slightly worn surface, partially encrusted.

16/SO89 (Fig. 9.1)

Bead

Tomb 28, Grave 3, SU31817

Orange banded agate; length 1.4 cm, diameter 0.6 cm, perforation diameter 0.1 cm

Barrel-shaped bead perforated lengthwise; orange colour with bands ranging from dark orange to white. Polished surface; slightly worn.

17/SO66 (Fig. 9.2)

Bead

Tomb 23a, SU20 on bench SU29

Brown banded agate; length 5.2 cm, diameter 1.7 cm, perforation diameter 0.1 cm

Long barrel-shaped bead perforated lengthwise; light brown colour with bands ranging from dark brown to white. Polished surface, slightly worn and encrusted.

18/SO11 (Fig. 9.2)

Bead

Tomb 7

Eye agate; length 1.2 cm, width 1 cm, thickness 0.7 cm, perforation diameter 0.2 cm

Lenticular bead; whitish colour with large central brown eye. Polished surface, slightly worn, especially at one of the apexes.

19/SO15 (Fig. 9.2)

Bead

Tomb 7

Brown chalcedony (?); diameter 1.4 cm, thickness 0.6 cm, perforation diameter 0.3 cm

Cylinder disk bead; light brown colour. Irregular and heavily worn surface, slightly encrusted.

20/SO13 (Fig. 9.2)

Bead

Tomb 7

Black onyx (?); diameter 0.6-0.7 cm, perforation diameter 0.2 cm

Spherical bead; black. Irregular yet polished surface; slightly worn.

21/SO14 (Fig. 9.2)

Bead

Tomb 7

Black onyx (?); diameter 0.5-0.6 cm, perforation diameter 0.1 cm
Spherical bead; black. Irregular yet polished surface; slightly worn.

22/SO41 (Fig. 9.2)

Bead

Tomb 23a, SU30

Black onyx (?); diameter 2.3-2.5 cm, perforation diameter 0.3 cm
Spherical bead; black. Irregular yet polished surface; slightly worn.

23/SO87 (Fig. 9.2)

Bead

Tomb 28, Grave 3, SU31817

Bone (?); length 2.4 cm, width 1.1 cm, perforation diameter 0.1 cm
Prismatic truncated bicone bead perforated lengthwise; black. Surface slightly worn, with small cracks visible on it.

24/SO90

Worked stone

Tomb 26, SU31527

Stone; length 1.3 cm, width 1 cm

Fragmentary small worked stone; irregular shape; brown colour. Probably originally pierced. Polished surface.

25/SO91 (Fig. 9.2)

Bead

Tomb 26, SU31527

Glass; length 0.45 cm, diameter 0.55 cm, perforation diameter 0.2 cm
Small spherical bead; greenish colour. Surface slightly worn and encrusted.

26/SO86

Bead

Tomb 28, Grave 3, SU31817

Glass; length 1.6 cm, width 1.15 cm, perforation diameter 0.1 cm
Ovoidal lenticular bead perforated lengthwise; brown. Surface crackled and slightly worn.

27/SO92

Bead

Tomb 28, Grave 3, SU31817

Bone (?); length 2.4 cm, thickness 0.5 cm, perforation diameter 0.1 cm
Irregular oblong bead made of bone (?) and perforated lengthwise; whitish colour. Plain smooth surface; chipped at one end.

28/SO93 (Fig. 9.2)

Bead

Tomb 28, Grave 3, SU31817

Bone (?); length 2 cm, diameter 0.4 cm

Irregular cylindrical bead made of bone (?) and perforated lengthwise; whitish colour. Slightly encrusted surface.

29/SO72

Applied decoration

Tomb 23a, SU20 on bench SU29

Glass or mother of pearl; diameter 0.7 cm

Small semi-spherical decoration in glass or mother pearl; whitish iridescent colour.

Rings

30/SO38 (Fig. 9.2)

Small ring

Tomb 20

Bronze; diameter 1-1.1 cm, thickness 0.2 cm

Small bronze ring, now slightly deformed but probably circular in origin; metal heavily corroded. Two separate ends that appear joined due to corrosion.

31/SO83 (Fig. 9.2)

Ring

Tomb 28, Grave 3, SU31817

Bronze; diameter 1.4-1.6 cm, thickness 0.2-0.4 cm

Small irregular bronze ring; metal heavily corroded. The separate thicker ends appear joined due to corrosion.

32/SO56

Small ring

Tomb 20

Bronze; outer diameter 1.1 cm, inner diameter 0.6 cm, thickness 0.2 cm

Small bronze ring, now deformed; metal heavily corroded. Originally probably part of a necklace or an earring.

33/SO67 (Fig. 9.2)

Ring

Tomb 23a, SU20 on bench SU29

Bronze; external diameter 2.2 cm, internal diameter 1.5 cm, thickness 0.3-0.4 cm

Circular bronze ring; very regular shape, probably produced by casting. Metal heavily corroded.

34/SO71 (Fig. 9.2)

Ring

Tomb 23a, SU20 on bench SU29

Bronze; external diameter 2.1 cm, internal diameter 1.3 cm, thickness 0.3-0.4 cm

Circular bronze ring; very regular shape, probably produced by casting. Metal heavily corroded.

Needle and pin

35/SO16 (Fig. 9.2)

Pin

Tomb 7

Bronze; total length 14 cm, shank diameter 0.1-0.3 cm; (pin head) length 2.9 cm, width 1.2 cm, thickness 1.3 cm

Bronze pin with the head in the form of a seated couple. The bearded male figure on the right embraces with his right arm the female figure on the left, while his left arm is lifted and bent over his shoulder as in the act of holding probably a spear or a sceptre. He turns his face towards his mate in a three-quarter pose. His hairstyle is not clear, but the hair seems to be tied up on the top of the head wearing a modius. He is half naked, the lower part of his body being covered by a thick cloth, perhaps a *himation*. His torso is in full front, while his legs are in a slight three-quarter view, the left ankle overlapping the right. The female figure appears fully dressed; she wears a long tunic, possibly wrapped in a thicker garment, and her hairstyle is hidden by a veil falling on the shoulders. Her right arm is bent and the hand brought at her breast; with this gesture she might hold her veil as well, but it is unclear. Her head and legs are depicted in three-quarter and converge toward the centre as those

of the male character. The couple seats on a simple stool or a cushion which lies on a lotus flower. Pin head probably produced by casting and shaft by hammering. Many details are lost due to the severe corrosion of the bronze.

Cellerino, Foietta 2020, 68, fig. 7d.

36/SO84 (Fig. 9.2)

Needle

Tomb 28, Grave 3, SU31817

Bronze; length 3.9 cm, thickness 0.2 cm

Small needle used to fasten clothes with a small hole on the head; metal heavily corroded.

Mirror and Cosmetic Tool

37/SO65 (Fig. 9.3)

Mirror

Tomb 23a, SU32

Bronze; diameter 10.7 cm, thickness 0.3 cm, tang length 2.8 cm

Circular plain mirror with small stepped and pointed tang which was inserted into a handle made from a different material; slightly convex surface. Metal heavily corroded.

38/SO63 (Fig. 9.3)

Spatula

Tomb 23a, SU32

Bronze; total length 15.5 cm, shank diameter 0.2-0.3 cm, tip diameter 0.6-0.2 cm; (handle) length 4.9 cm, width 1.3 cm, thickness 0.2 cm

Spatula with flat elongated blade and concave edges; two plain bands and four thin rounded ridges decorate the shaft at the base of the blade; thick rounded end. Probably produced by casting; surface slightly encrusted.

Metal Appliques

39/SO55 (Fig. 9.3)

Applique decoration (?)

Tomb 23a, SU20

Iron; length 3.6 cm, thickness 0.7 cm

Fragmentary and heavily corroded applique decoration. The original appearance and function are unclear, but what remains suggest it may have the shape of a crescent or a leaf.

40/SO44 (Fig. 9.3)

Applique (?)

Tomb 23a, SU20 on bench SU29

Bronze; length 6.9 cm, width 2-4.3 cm, thickness 0.4 cm; (protruding part) length 3.4 cm, width 3.3 cm, thickness 0.5 cm

Wide drop-shaped applique or decoration having a quadrangular handle or protruding part. Possibly produced by hammering in two pieces later soldered. Surface corroded. Almost identical to nos 41-42/SO45-46.

41/SO45 (Fig. 9.3)

Applique (?)

Tomb 23a, SU20 on bench SU29

Bronze; length 5.6 cm, width 2.2-4.6 cm, thickness 0.4-0.5 cm; (protruding part) length 3 cm, width 2.8 cm, thickness 0.4-0.5 cm

Wide drop-shaped applique or decoration having a quadrangular handle or protruding part. Possibly produced by hammering in two pieces later soldered. Surface corroded. Almost identical to nos. 40, 42/SO44 and 46.

42/SO46 (Fig. 9.3)

Applique (?)

Tomb 23a, SU20 on bench SU29

Bronze; length 4.9 cm, width 1.9-4 cm, thickness 0.4-0.5 cm; protruding part length 3.3 cm, protruding part width 3.1 cm, protruding part thickness 0.5 cm

Wide drop-shaped applique or decoration having a quadrangular handle or protruding part. Possibly produced by hammering in two pieces later soldered. Surface corroded. Almost identical to nos 40-41/SO 44-45.

Ring

43/SO85 (Fig. 9.3)

Ring

Tomb 26, SU31529 on the threshold

Iron; diameter 5.2 cm, thickness 0.6-0.8 cm

Large circular ring, possibly part of the door or of a piece of furniture. Surface heavily corroded and encrusted

Metal Vessels

44/SO61 (Fig. 9.4)

Shallow bowl

Tomb 23a, SU32

Bronze; length 6.7 cm (original diameter 12.2 cm), height 2.1 cm, thickness 0.2 cm

Fragmentary small shallow bowl broken in two adjoining fragments; plain rounded rim, rounded base. Surface heavily corroded.

45/SO37 (Fig. 9.4)

Stand

Tomb 23a, SU20

Bronze; height 8.5 cm, upper rim diameter 6.5 cm, lower rim diameter 9 cm, body diameter 4.5-5.2 cm, thickness 0.2 cm

Deformed cylindrical bronze stand flaring out at bottom; outturned rims with plain slightly pointed lips; diameter of the foot larger than that of the rim; metal heavily corroded. The object is severely damaged, less than half preserved.

46/SO97 (Fig. 9.4)

Strainer (?)

Trench 1, SU7

Bronze; width 10 cm, height 5.4 cm, thickness 0.1 cm

Fragment of a small bronze vessel with outturned irregular rim; shallow irregular bowl where there are three irregular holes. A small clamp in the wall seems to have been applied in order to repair the object. Metal heavily corroded.

Spoons

47/SO43 (Fig. 9.5)

Spoon

Tomb 23a, SU29

Bronze; total length 13 cm, handle diameter 0.2-0.4 cm, bowl diameter 3 cm, bowl depth 0.7 cm

Bronze spoon with circular bowl; cylindrical handle tapering towards the end; end pointed and slightly thicker. Probably produced by casting; surface corroded and incrustated.

48/SO62 (Fig. 9.5)

Spoon

Tomb 23a, SU32

Bronze; total length 12.2 cm, handle diameter 0.2-0.3 cm, bowl width 3.1 cm, bowl thickness 0.4-0.5 cm
Fragmentary bronze spoon with oval shallow bowl; cylindrical handle tapering towards the end; part of the bowl and tip of the handle missing. Probably produced by casting; surface heavily corroded and incrustated.

Glass Vessels

49/SO79 (Fig. 9.5)

Perfume bottle

Grave 2, SU31549

Blown glass; height 12.1 cm, rim diameter 2.1 cm, maximum diameter 2.7-2.8 cm, thickness 0.2cm
Slightly irregular glass perfume bottle Plain everted rim, long cylindrical neck, tapering upward, without constriction at bottom; pear-shaped body slightly carinated, flat base slightly concave. Neck colour: Munsell soil colour charts GLEY1 8.2 (pale green); body and base colour: Munsell soil colour charts GLEY1 5.2 (greyish green). Surface heavily worn with visible patina.

50/SO80 (Fig. 9.5)

Perfume bottle

Tomb 28, Grave 3, SU31817

Blown glass; height 12.1 cm, rim diameter 2.1-2.2 cm, maximum diameter 2.7-2.8 cm, thickness 0.2 cm
Slightly irregular glass perfume bottle. Plain everted rim, long cylindrical neck, tapering upward, without constriction at bottom; pear-shaped body slightly carinated, flat base slightly concave. Neck colour: Munsell soil colour charts GLEY1 8.2 (pale green); body and base colour: Munsell soil colour charts GLEY1 5.2 (greyish green). Surface heavily worn with visible patina.

Stone Vessel

51/SO39 (Fig. 9.5)

Alabaster

Tomb 23, SU4

Stone (Whitish, dark veined, gypsum alabaster or calcite); height 8.3 cm, shoulder diameter 7.5 cm, thickness 0.6-0.9 cm
Fragmentary stone vessel; ovoid body; upper part of the neck, rim and lower part of the body missing. Polished surface; calcareous incrustations on the inner surface and section.

Pestles

52/SO36 (Fig. 9.6)

Pestle

Trench 1, SU17

Stone; length 15.2 cm, width 7.3 cm, thickness 6 cm
Cylindrical pestle tapering at one end; oval section. Chipped at both the upper and lower edges; surface partially eroded.

53/SO74 (Fig. 9.6)

Pestle

Trench 8, SU24

Stone; height 9 cm, width 7 cm, thickness 6.6 cm
Fragment of a cylindrical pestle; oval section. Broken at both ends; surface partially eroded and encrusted.

54/SO75 (Fig. 9.6)

Pestle

Trench 8, SU24

Stone; height 5.2 cm; diameter 7.1 cm

Fragment of a cylindrical pestle; oval section. Broken at both ends; surface partially eroded and encrusted.

55/SO99 (Fig. 9.6)

Pestle

Trench 1, SU3

Stone; length 9.8 cm, width 7.8 cm, thickness 6.3 cm

Fragment of a cylindrical pestle; oval section. Broken at both ends; surface partially eroded.

Stone tool

56/SO98 (Fig. 9.6)

Tool (?)

Trench 1, SU7

Stone; length 8.5, width 1.7, thickness 1 cm

Small stone object of unclear purpose; slightly curved profile; oval in section. Surface partially worn and encrusted.

Metal Blades

57/SO64 (Fig. 9.6)

Knife

Tomb 23a, SU32

Iron; total length 9.8 cm, blade length 6 cm, width 0.3-1.3 cm, thickness 0.3 cm

Small knife; triangular blade with curved cutting edge; pointed tang still preserved. Broken in two adjoining fragments; metal heavily corroded.

58/SO04 (Fig. 9.6)

Blade

Tomb 7

Iron; length 5.7 cm, width 1.3-1.8 cm, thickness 0.4 cm

Part of a small blade broken in two adjoining fragments; metal heavily corroded.

59/SO05 (Fig. 9.6)

Blade

Tomb 7

Iron; length 4.5 cm, width 2 cm, thickness 0.4-0.6 cm

Fragment of a blade with part of the tang still preserved (?); metal heavily corroded.

60/SO06 (Fig. 9.6)

Knife

Tomb 7

Iron; length 3.2 cm, width 1.4, thickness 0.4-1.5 cm

Small knife; blade with curved cutting edge; part of the tang still preserved; metal heavily corroded.

61/SO07 (Fig. 9.6)

Blade (?)

Tomb 7

Iron; length 1.5 cm, width 3 cm, thickness 0.15-0.2 cm

Fragment of a blade (?); metal heavily corroded.

Nails

62/SO01 (Fig. 9.6)

Nail

Tomb 23a, SU20

Iron; length 6.1 cm, thickness 0.6-1 cm; (head) length 2.7 cm, width 2.1 cm

Nail with quadrangular section; fragmentary flat head (originally subcircular); metal heavily corroded.

63/SO02 (Fig. 9.6)

Nail

Tomb 23a, SU20

Iron; length 5.3 cm, thickness 0.5-0.8 cm

Fragmentary shank of a nail with quadrangular section; the head and the tip are missing; metal heavily corroded.

64/SO03 (Fig. 9.6)

Nail

Trench 8, SU12

Iron; length 9 cm, thickness 0.5 cm

Fragmentary shank of a nail with quadrangular section; head missing; metal heavily corroded.

65/SO08 (Fig. 9.6)

Nail

Tomb 23a, SU20

Iron; length 5.2 cm, thickness 0.5 cm

Shank of a nail with quadrangular section; head missing; metal heavily corroded.

66/SO47

Nail

Tomb 23a, SU20

Iron; length 3.7 cm, thickness 0.6 cm

Fragmentary nail with quadrangular section; flat head; metal heavily corroded.

67/SO48

Nail

Tomb 23a, SU20

Iron; length 4 cm, thickness 0.5 cm

Fragmentary nail with quadrangular section; metal heavily corroded.

68/SO49

Nail

Tomb 23a, SU20

Iron; length 3.5 cm, thickness 0.6 cm

Fragmentary nail with quadrangular section; metal heavily corroded.

69/SO50

Nail

Tomb 23a, SU20

Iron; length 4.6 cm, thickness 0.7 cm

Fragmentary nail; quadrangular section; metal heavily corroded.

70/SO51

Nail (?)

Tomb 23a, SU20

Iron; length 3.7 cm, thickness 0.6 cm, (head) width 1.1 cm

Fragmentary nail with two flat heads at both ends; quadrangular section; metal heavily corroded.

71/S052

Nail

Tomb 23a, SU20

Iron; length 3.2 cm, thickness 0.8 cm

Fragmentary nail with quadrangular section; head and part of the shank missing; metal heavily corroded.

72/S053

Nail

Tomb 23a, SU20

Iron; length 4 cm, thickness 1.1 cm

Fragmentary nail with quadrangular section; metal heavily corroded.

73/S054

Nail

Tomb 23a, SU20

Iron; length 3.9 cm, diameter 1 cm

Fragmentary nail with circular section; metal heavily corroded.

74/S0100

Nail

Trench 1, surface

Iron; length 2.5 cm, thickness 0.2-0.6 cm

Fragmentary nail with quadrangular section; head missing; metal heavily corroded.

Statue Fragments

75/SS01 (Fig. 9.7)

Statue fragment

Trench 1, SU10

Stone; length 5.6 cm, width 5 cm, thickness 3.2-1.8 cm

Fragment of a stone sculpture depicting a human eye. The fragment retains a hint of the eyebrow arch. It is possible to identify the eye as left. The upper and lower lashes are marked with slight notches. The lacrimal caruncle is described. Round iris defined by a very shallow groove inside the eyeball. Surface slightly worn.

76/SS02 (Fig. 9.7)

Statue fragment

Surface, area of the spring, to the south of Terrace 1

Stone; height 22 cm, width 23-25 cm, thickness 18 cm

Fragment from a free-standing statue depicting the lower part of the dress of a human figure, most likely female. The drapery is made by shallow oblique grooves running parallel; they are almost vertical on the flanks and gradually become softer and wavier on what appears to be the main side. The shape and features of the drapery also suggest that the figure was probably standing on the right leg, slightly bending the left at the knee. The fragment is more carefully carved on three sides; the fourth side, presumably the back, is largely broken, but what remains of the folds reveals a coarser design and execution. The dress, long and loose, covers the feet completely. It broadens at the base, where a small narrower base is sculpted instead of the feet. Broken in several spots, especially at the back; the rest of the surface is slightly worn.

Betyls

77/SO95 (Fig. 9.8)

Betyl or base (?)

Tomb 28, SU31813, near the south wall of the tomb

Stone; height 32 cm, width/diameter 20-30 cm

Tronco-conical stone betyl or base (?); plain large band at the base.

78/SO96 (Fig. 9.8)

Betyl

Trench 1, SU19

Stone; height 26 cm, maximum diameter 9.8 cm

Small cylindrical betyl with an oval base; decoration consisting in a plain band in relief over the base. Whitish stone. Top missing, base partially broken. Irregular surface, particularly worn and encrusted on one side.

79/SO101 (Fig. 9.9)

Betyl or stand

Trench 13, SU19

Limestone; height 78 cm, maximum diameter 26 cm

Cylindrical betyl with flat flaring bases; no decoration visible. The object is almost complete, only one of the bases is slightly broken. The surface encrusted on one side.

Censer

80/SO94 (Fig. 9.9)

Censer

Courtyard giving access to Tombs 26 and 28, (SU31515) in front of Tomb 28

Limestone; height 21.5 cm, base 9.6 x 10.5 cm, body diameter 7 cm, rim diameter 8.1 cm, internal rim diameter 6.1 cm

Small censer on a quadrangular plinth; cylindrical body decorated by a braided ridge in the upper part below the rim and ending in a wide lenticular base. A plain ridge, delimited by two deep grooves, decorates the quadrangular plinth below. Small bowl carved at the top of the censer with no signs of burning. Plain thick rim decorated on the exterior by a simple groove. Whitish colour. Quadrangular plinth chipped at one of the corners. Surface slightly worn and encrusted.

Coins

81/C01 (Fig. 9.10)

Coin

Surface

Bronze; diameter 1.2 cm

Obverse: illegible; surface heavily corroded.

Reverse: illegible; surface heavily corroded.

82/C02 (Fig. 9.10)

Coin

Surface

Bronze; diameter 1.4 cm

Obverse: the surface is corroded, but a bust facing left seems to be depicted here. The nose, the pointed beard and the hairstyle topped by a tuft bound with a diadem are still visible, as well as a crescent and an anchor behind the head.

Reverse: illegible; surface heavily corroded.

Drachm; Uncertain Early Arsacid Kings (?)

Date: Elymaean-Arsacid dynasty, late 1st century BCE - early 2nd century CE

83/C03 (Fig. 9.10)

Coin

Surface

Bronze; diameter 1.6 cm

Obverse: bust facing left, with pointed beard and curly hairstyle, slightly curved from the forehead to the nape, topped by a tuft of hair bound with a diadem whose ties fall on the shoulders; behind, a dot within a crescent and an anchor with one crossbar; pellet border. No legend visible.

Reverse: dashes roughly arranged in rows; no border. No legend visible.

Drachm; Uncertain Early Arsacid Kings

Date: Elymaean-Arsacid dynasty, late 1st century BCE - early 2nd century CE

84/C04 (Fig. 9.10)

Coin

Tomb 28, on the floor of the tomb (SU31815) near the south wall

Bronze; diameter 1.6 cm, thickness 0.3 cm

Obverse: diademed bust facing forward with large curly tufts of hair on each side of the head arranged in slightly upward-oriented rows and a small tuft on the top; to the right, a star or dot within a crescent, only partially legible on the upper border, and an anchor (with possibly two crossbars); no border. No legend visible.

Reverse: illegible; surface heavily corroded.

Drachm; Kamnaskires-Orodes or Orodes II

Date: Elymaean-Arsacid dynasty, early-mid 2nd century CE



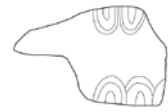
No. 1/SO57



No. 2/SO58



No. 3/SO59



No. 4/SO81



Nos. 5/SO42; 6/SO60; 7/SO68; 8/SO69;
9/SO70

No. 10/SO82

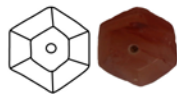
scale 1:2



No. 11/SO10



No. 12/SO88



No. 13/SO09



No. 14/SO12



No. 15/SO40

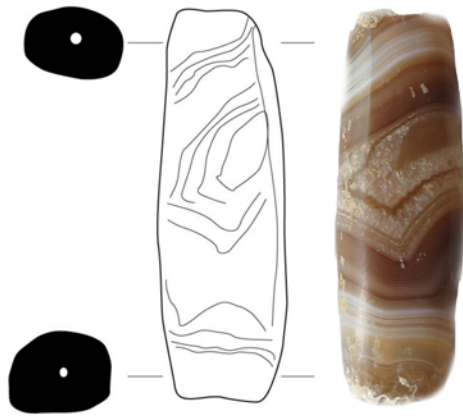


No. 16/SO89

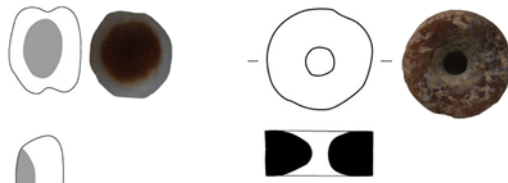
scale 1:1

Figure 9.1 - Personal adornment

SHAMI, KAL-E CHENDAR



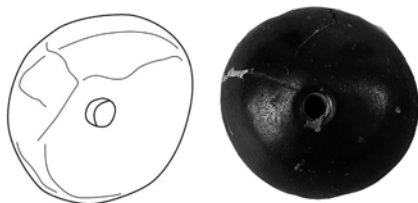
No. 17/SO66



No. 19/SO15



No. 18/SO11



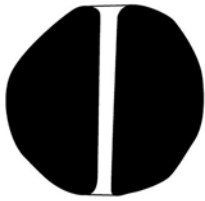
No. 22/SO41



No. 20/SO13



No. 21/SO14



No. 23/SO87



No. 25/SO91



No. 28/SO93

scale 1:1



No. 30/SO38



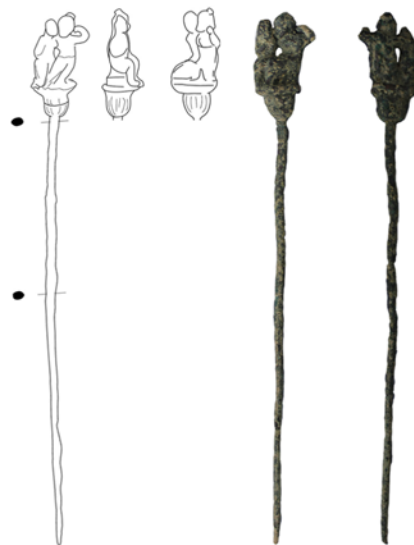
No. 31/SO83



No. 33/SO67



No. 34/SO71



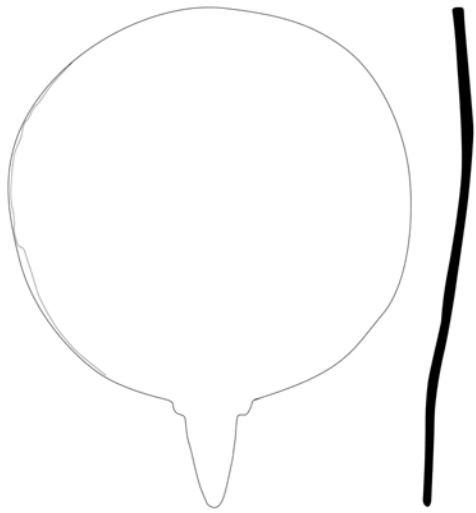
No. 35/SO16



No. 36/SO84

scale 1:2

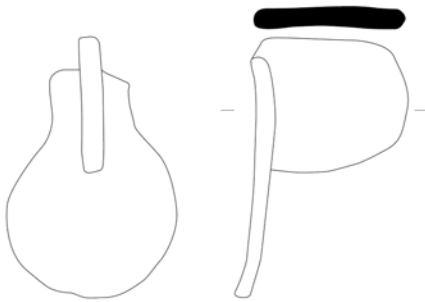
Figure 9.2 - Personal adornment



No. 37/SO65



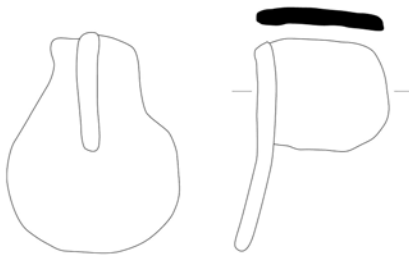
No. 38/SO63



No. 40/SO44



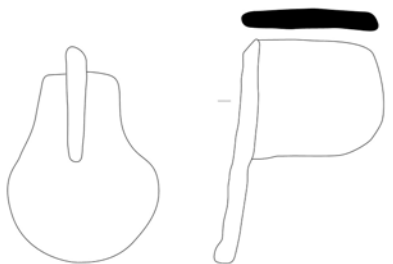
No. 39/SO55



No. 41/SO45



No. 43/SO85

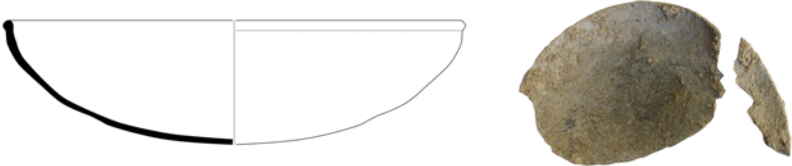


No. 42/SO46

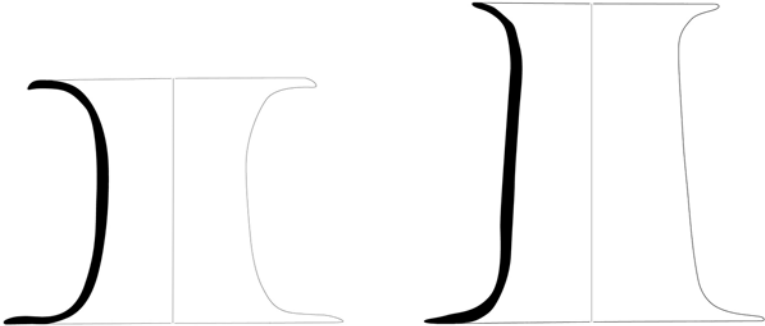


scale 1:2

Figure 9.3 - Toiletries and furniture



No. 44/SO61



No. 45 - SO37



No. 46/SO97

scale 1:2

Figure 9.4 - Vessels and tableware



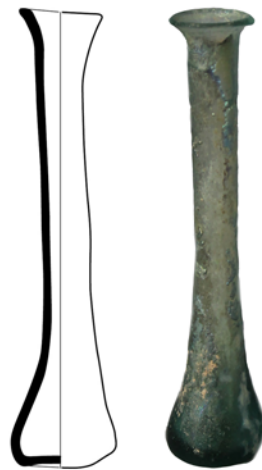
No. 47/SO43



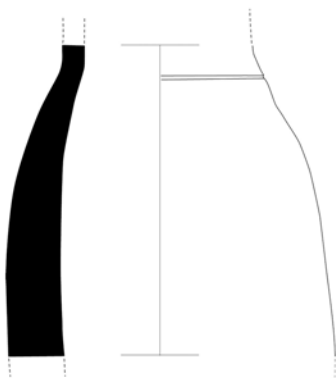
No. 48/SO62



No. 49/SO79



No. 50/SO80



No. 51/SO39

scale 1:2

Figure 9.5 - Vessels and tableware



No. 52/SO36



No. 53/SO74



No. 54/SO75



No. 55/SO99



No. 56/SO98



No. 57/SO64



No. 58/SO04



No. 59/SO05



No. 60/SO06



No. 61/SO07



No. 62/SO01



No. 63/SO02



No. 64/SO03



No. 65/SO08

scale 1:2

Figure 9.6 - Utensils



No. 75 - SS01

scale 1:1



No. 76 - SS02

scale 1:3

Figure 9.7 - Sculptures



No. 77 - SO95



No. 78 - SO96

scale 1:3

Figure 9.8 - Sculptures



No. 79/SO101

scale 1:6



No. 80/SO94

scale 1:3

Figure 9.9 - Sculptures



No. 81/C01



No. 82/C02



No. 83/C03



No. 84/C04

scale 1:1

Figure 9.10 - Coins

Chapter 10

The Prehistoric Lithic Assemblage of Kal-e Chendar

Elisabetta Starnini

10.1 Introduction

For the Palaeolithic period, Khuzestan is one of the regions less known in comparison to the Zagros and Alborz mountain zones, located just to its east.¹ Therefore, despite the small number of artefacts and lack of stratigraphic context, it seemed to be important to describe and publish the lithic assemblage recovered from Kal-e Chendar, during the archaeological excavations carried out in 2013-2015 by our expedition.²

Kal-e Chendar is located in the Izeh mountainous area of Khuzestan, north of the Plain of Susa, at the edge of the Mesopotamian plain, north-east of the Persian Gulf (Fig. 10.1). During the excavations of the remains of a monumental Hellenistic and Parthian terraced complex, some trenches yielded a few prehistoric chipped stone artefacts (see Catalogue 10.4). The lithic artefacts from Kal-e Chendar show technological and typological characteristics similar to those of the Late Upper Palaeolithic (LUP) assemblages of the Izeh area.³

10.2 The lithic assemblage: techno-typological characteristics

The assemblage consists of only 22 chipped stone artefacts, recovered during the excavations of Trench 1 and Trench 8 from different stratigraphic units (SU) (Figs 10.2-3, and catalogue 10.4). Among the finds, there is one small subconical bladelet core, with unidirectional détachements (Fig. 10.2, no. 11). The remaining items consist of bladelets, a few of which with abrupt retouch (Fig. 10.2, nos 3, 6, 7), flakes and debitage products (Fig. 10.3, no. 9). Unfortunately, except for the core and some backed bladelet, there are no other retouched implements that can be considered diagnostic from the chrono-cultural point of view.

The chipped stone assemblage comprises three main categories of raw materials that can be distinguished on the base of the colour: brown-light brown cherts, grey chert and red chert. All the raw materials are most probably of local/regional availability, and could be collected in the Izeh Plain and its surroundings in form of pebbles in the coarser alluvial deposits of riverbeds, transported from the mountains to the foothills by seasonal floods.⁴

10.3 Discussion

In contrast to the knowledge about the Middle and Early Upper Palaeolithic periods, we have little information especially about the LUP, Epi-Palaeolithic and early Holocene peopling of this region.⁵ Up to now, a few systematic prehistoric surveys have been performed in the plain of Izeh after the first explorations conducted by a joint team led by Wright in the 1970s.⁶ More recently, a surface survey of Izeh and Piyun plains conducted by Jayez, Mirzai and Niknami identified 19 sites.⁷ They have been attributed to the Late Palaeolithic based on the techno-typological characteristics of the surface lithic

¹ Dinarvand, Mehranpour 2015; Bahramiyan 2019.

² Baqherian et al. 2016; Bucci et al. 2017; 2018; Messina 2014. The author is grateful to the Italian co-director, for the possibility to study the chipped stone tools.

³ Niknami et al. 2009.

⁴ Jayez 2015, tab. 2.

⁵ Vahdati Nasab 2011; Darabi et al. 2021, fig. 5.

⁶ Wright 1979.

⁷ Jayez et al. 2019.

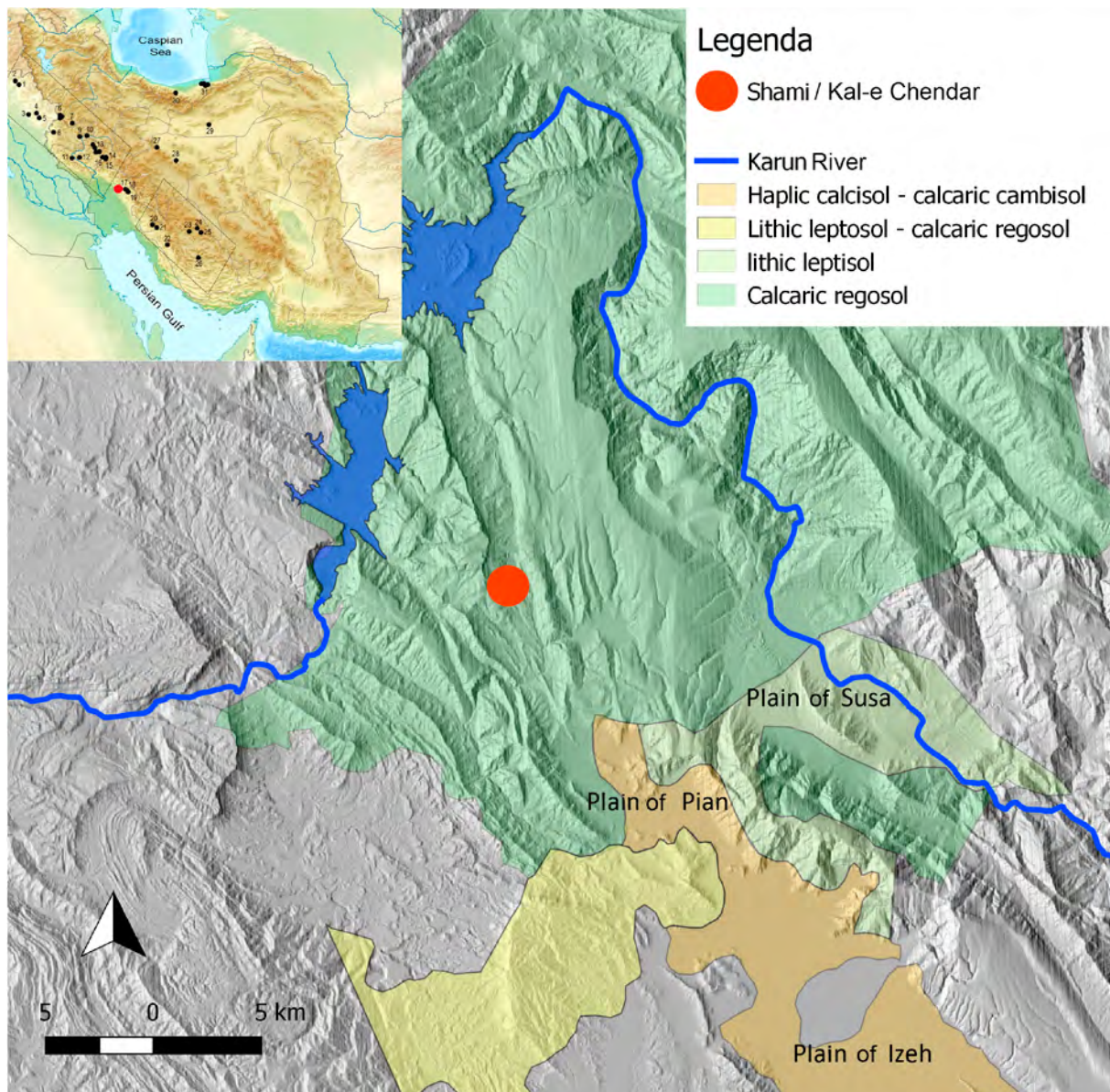


Figure 10.1 - Location of Kal-e Chendar (Shami, red dot) on the soil map, and of major Late Palaeolithic sites in Zagros Mountains (Iran and Iraq) and other regions of Iran (top left, modified from Jayez 2019, Fig. 1)

assemblages.⁸ Further research was carried out in south-west Iran by the Tübingen-Iranian Stone Age Research Project (TISARP). In particular, the TISARP expedition conducted Palaeolithic surveys at the southern foothills of Zagros and in the Basht region of northern Khuzestan reporting the existence of several Upper and Middle Palaeolithic localities, mostly caves and rock shelters.⁹

Regarding the geomorphological agents shaping the landscape in this area that nowadays might influence Palaeolithic site visibility, alluvial and colluvial fans actually are and were an active factor in the development of Upper Khuzestan, while the Lower Khuzestan plain was affected by rising sea levels during the Early and Middle Holocene.¹⁰

All the 22 chipped stone artefacts from Kal-e Chendar have been retrieved as residual material, scattered in different stratigraphic units. Nevertheless, they can be attributed to one single coherent

⁸ Jayez et al. 2019.

⁹ Ghasidian et al. 2009.

¹⁰ Lambeck 1996.



Figure 10.2 - Kal-e Chendar (Shami) chipped stone artefacts: nos 1, 2, 4, 5, 8, 9, 13) unretouched bladelets and blade fragments; nos 3, 6, 7) retouched bladelets; nos 10, 12) flakes, debitage products; 11) bladelet core

assemblage with techno-typological features characteristic of the Late Upper Palaeolithic comparable with those known for the area.¹¹ They testify for a Late Pleistocene human presence at Kal-e Chendar prior to the construction of the Hellenistic and Parthian complex there identified.

On the other hand, comparisons with the few Early Neolithic chipped stone assemblage known from Khuzestan, for instance those retrieved from the excavations at Tapeh Mahtaj,¹² show indeed different techno-typological features, reinforcing the attribution of the Kal-e Chendar chipped stone artefacts to a LUP age.

¹¹ Jayez 2015.

¹² Darabi et al. 2021, fig. 4.



Figure 10.3 - Kal-e Chendar (Shami) chipped stone artefacts: nos 1, 4) bladelets and bladelet fragments; nos 2, 3, 5-8) flakes, flakelets and fragments; no. 9) piece écaillé

10.4 Catalogue

Form no.	1
Object no.	SO17
Stratigraphy	Trench 8, SU15
Figure	10.2, no. 1
Dimensions	(1.6) x 0.5 cm
Colour	Dark brown
Description	Fr of unretouched bladelet, triangular cross section, distal fracture

Form no.	2
Object no.	SO18
Stratigraphy	Trench 8, SU14
Figure	10.2, no. 11
Dimensions	2.2 x 1.6 cm
Colour	Brown
Description	Pyramidal bladelet core, one flat platform, unidirectional, 10 <i>tournant</i> détachements

Form no.	3
Object no.	SO19
Stratigraphy	Trench 8, SU14
Figure	10.2, no. 12
Dimensions	(3.5) x 1.8 cm
Colour	Brown
Description	Thick flake fragment, debitage waste, product from manufacture

Form no.	4
Object no.	SO20
Stratigraphy	Trench 8, SU14
Figure	10.2, no. 10
Dimensions	2.4 x 1.7 cm
Colour	Brown
Description	Thick flake fragment, debitage waste, product from manufacture

Form no.	5
Object no.	SO21
Stratigraphy	Trench 8, SU14
Figure	10.2, no. 13
Dimensions	2.2 x 0.9 cm
Colour	Grey
Description	Unretouched bladelet

Form no.	6
Object no.	SO22
Stratigraphy	Trench 8, SU14
Figure	10.2, no. 4
Dimensions	1.6 x 1.2 cm
Colour	Red
Description	Proximal blade fragment, trapezoidal cross section

Form no.	7
Object no.	SO23
Stratigraphy	Trench 1, SU16
Figure	10.3, no. 8
Dimensions	3.4 x 2.9 cm
Colour	Grey
Description	Unretouched flake

Form no.	8
Object no.	SO24
Stratigraphy	Trench 1, SU16
Figure	10.3, no. 9
Dimensions	2.6 x 2.8 cm
Colour	Brown
Description	Piece écaillé

Form no.	9
Object no.	SO25
Stratigraphy	Trench 1, SU16
Figure	10.3, no. 4
Dimensions	2,5 x 1 cm
Colour	Red-brown
Description	Bladelet

Form no.	10
Object no.	SO26
Stratigraphy	Trench 1, SU16
Figure	10.3, no. 2
Dimensions	0,7 x 1,2 cm
Colour	Light brown, translucent
Description	Unretouched flakelet

Form no.	11
Object no.	SO27
Stratigraphy	Trench 1, SU16
Figure	10.3, no. 6
Dimensions	1.6 x 1.1 cm
Colour	Light brown, translucent
Description	Unretouched flakelet

Form no.	12
Object no.	SO28
Stratigraphy	Trench 1, SU16
Figure	10.3, no. 3
Dimensions	0.9 x 0.8 cm
Colour	Light brown, translucent
Description	Unretouched flakelet

Form no.	13
Object no.	SO29
Stratigraphy	Trench 1, SU16
Figure	10.2, no. 6
Dimensions	2.6 x 0.7 cm
Colour	Dark-brown/reddish
Description	Retouched bladelet, bilateral notches, distal fracture, triangular cross section

Form no.	14
Object no.	SO30
Stratigraphy	Trench 1, SU16
Figure	10.2, no. 8
Dimensions	1.6 x 0.4 cm
Colour	Red
Description	Fragment of bladelet, trapezoidal cross section

Form no.	15
Object no.	SO31
Stratigraphy	Trench 1, SU16
Figure	10.2, no. 9
Dimensions	1.7 x 0.5 cm
Colour	Red
Description	Proximal fragment of bladelet

Form no.	16
Object no.	SO32
Stratigraphy	Trench 1, SU16
Figure	10.3, no. 1
Dimensions	1.4 x 0.5 cm
Colour	Red
Description	Distal fragment of bladelet

Form no.	17
Object no.	SO33
Material n.	S23
Stratigraphy	Trench 1, SU16
Figure	10.2, no. 7
Dimensions	2.5 x 0.6 cm
Colour	Red
Description	Retouched bladelet, bilateral retouch, trapezoidal cross section, distal fracture

Form no.	18
Object no.	SO34
Stratigraphy	Trench 1, SU16
Figure	10.3, no. 7
Dimensions	(1.6) x 0.9 cm
Colour	Brown-grey
Description	Flake fragment

Form no.	19
Object no.	SO35
Stratigraphy	Tomb 23c, SU6
Figure	10.3, no. 5
Dimensions	0.9 x 0.6 cm
Colour	Dark brown
Description	Unretouched flakelet

Form no.	76
Object no.	SO76
Stratigraphy	Trench 8, SU2
Figure	10.2, no. 2
Dimensions	2.2 x 0.7 cm
Colour	Dark-brown, translucent
Description	Two joining fragments of bladelet, trapezoidal cross section

Form no.	77
Object no.	S077
Stratigraphy	Trench 8, SU23
Figure	10.2, no. 3
Dimensions	2.8 x 0.8 cm
Colour	Light-brown, translucent
Description	Retouched bladelet, abrupt notched retouch on the right side

Form no.	78
Object no.	S078
Stratigraphy	Trench 8, SU20
Figure	10.2, no. 5
Dimensions	4.9 x 0.85 cm
Colour	Whitish
Description	Unretouched blade, triangular cross section

Chapter 11

The Cemetery of Kal-e Chander

Enrico Foietta

11.1 General remarks

In 1936 Stein was the first to identify a cluster of tombs at Kal-e Chendar east of the modern road crossing the village, spotting some of them on the general plan of the site. He described these structures as imposing underground chambers built of undressed stone blocks with a saddle-roof made of stone slabs.¹

After a decision taken by a local chief, almost twelve tombs were excavated a few years before Stein's visit; three tombs were excavated by Stein himself, who provided in his report information on their approximate location and plan, without the discovery of any funerary goods.²

A few years later, the French archaeologist André Godard visited Kal-e Chendar for two days.³ In the short report of his stay, he recorded that the area around the main terrace was 'riddled with tombs'. The underground structures are described as built with stone blocks, and easily detectable on the ground for the collapse of their ceiling; they were sometimes characterised by corridors more than 11 m long, 2.5 m high and 1.80 m wide.⁴ Usually they show a saddle-roof, but sometimes they are characterised by a flat corbelled ceiling. A tomb of the latter type was excavated during Godard's permanence,⁵ and the presence of some 'Hellenistic stucco mouldings' inside was reported.

Since 2012, our expedition has enhanced information about tombs and the cemetery area. Forty-four tombs have been recognised up to now,⁶ even if their number was surely higher, probably exceeding hundreds of tombs scattered along the archaeological site.

The recent fieldworks have emphasized that, in addition to a sanctuary function, clearly identified by the findings on the Upper Terrace and other religious structures brought to light, the site also had a funerary function with numerous tombs widespread throughout the surveyed area.

The tombs were located mainly east of the modern road crossing the Kal-e Chendar village to connect it with Piyun and the Karun dam, in an area already marked by Stein in his plan, while a few of them were close to the north and south streams and on the recognized terraces.

According to Godard, an underground tomb was located near the shrine reconstructed by Stein, where he had recovered the bronzes and several bases for statues.⁷ However, we were not able to find any trace of this burial structure during our excavations and survey on the Upper Terrace.⁸

All the tombs identified are underground or semi-underground chambers with a saddle-roof or sometimes a mixed roof technique (an entrance with flat ceiling and a saddle-roof on the rear). The walls are all built of roughly cut blocks and irregular stone slabs for the roof.

¹ Stein 1940, 140, plan 10.

² Stein 1940, 158.

³ Godard designed the Iran Bastan Museum and became its first director (Parrot 1966; Gran-Aymerich Marefat 2001).

⁴ Godard 1962, 178.

⁵ Godard 1965, 178-179.

⁶ The tombs T25-T28 were identified and excavated exclusively by the Iranian archaeological team in Spring 2016.

⁷ Godard 1962, 180. For the 'Parthian Nobleman' see Kawami 1987, 28; Mathiesen 1992, 88-89; on the more recent studies, new reconstruction, and updated bibliography, see Lindström 2017; 2019; 2021.

⁸ The structures unearthed during Stein's excavation have not been excavated by the Iranian-Italian Joint Expedition. The statues' exact finding spot remains doubtful even if a possible place for the location of the trench opened by Stein and Karimi is proposed in chapters 1 and 6.3.



Figure 11.1 - Examples of underground unexcavated tombs (T34, T35, T36), easily identifiable on the ground for the falling or the remains of the ceiling

Only three cases are simple cist graves defined by stone slabs or baked bricks, excavated in relation to or inside underground chamber tombs, sometimes in connection with other constructions or walls of the cemetery.

The chamber tombs are easily identifiable on the ground, by the ruins of their collapsed ceiling and the recovery of roof slabs near their placement for agriculture and illicit diggings (Fig. 11.1).

11.2 Catalogue

Nine underground or semi-underground chamber tombs (T7, T9, T20, T23, T24, T25, T26, T27, T28) and three cist graves (Gr1-3) have been excavated by our expedition out of the forty-four identified on the field (Fig. 11.2).⁹ All the chamber tombs had already been pillaged and were found almost empty of bones, even if some of them preserved part of the original grave goods, attesting the presence of a rich plutocracy buried at the site. The architectural features of the tombs, the pottery and the remaining goods discussed in the next paragraphs, give some suggestions on the chronology and use of this cemetery area. To facilitate their location on the site map, a conventional division of the cemetery in two parts was followed: east of the modern road (below called East Necropolis) and west of the modern road (below called West Necropolis): such a division didn't exist in ancient times arguably.

11.2.1 Tomb 7 (T7) (Figs 6.64-6.66)

T7 is located west of Terrace 3. The entrance to the chamber (2.60 x 1.60 m) opens to the east. The walls, built with irregular roughly cut blocks of different dimensions, reaches 1.40 m in height. The lower rows are constructed with larger blocks to lend better stability to the whole structure. The end wall, made of larger blocks, is built against the slope. The tomb shows a mixed roof technique with a saddle-roof and a flat ceiling respectively for the rear and entrance parts. This type of roof is identified only in this chamber tomb, while in T23 the mixed technique is probably the result of a later restoration (see below).

The tomb was looted thanks to a hole-pit (0.90 x 0.60 m) dug in the entrance. When it was excavated in 2014, the tomb had probably been just pillaged as the discovery of a very small fill and the recovery of a few goods and fragments of bones clearly show. Flat irregular stones set in earth composed the floor. The entrance opens on the east wall and is slightly displaced to the south.

⁹ See chapter 6 for references to the detailed stratigraphy of each tomb. The plans and sections of all the tombs are available in the same chapter. For each tombs the figures published in the entire volume are reported. Only these tombs will be described in detail in the following catalogue.

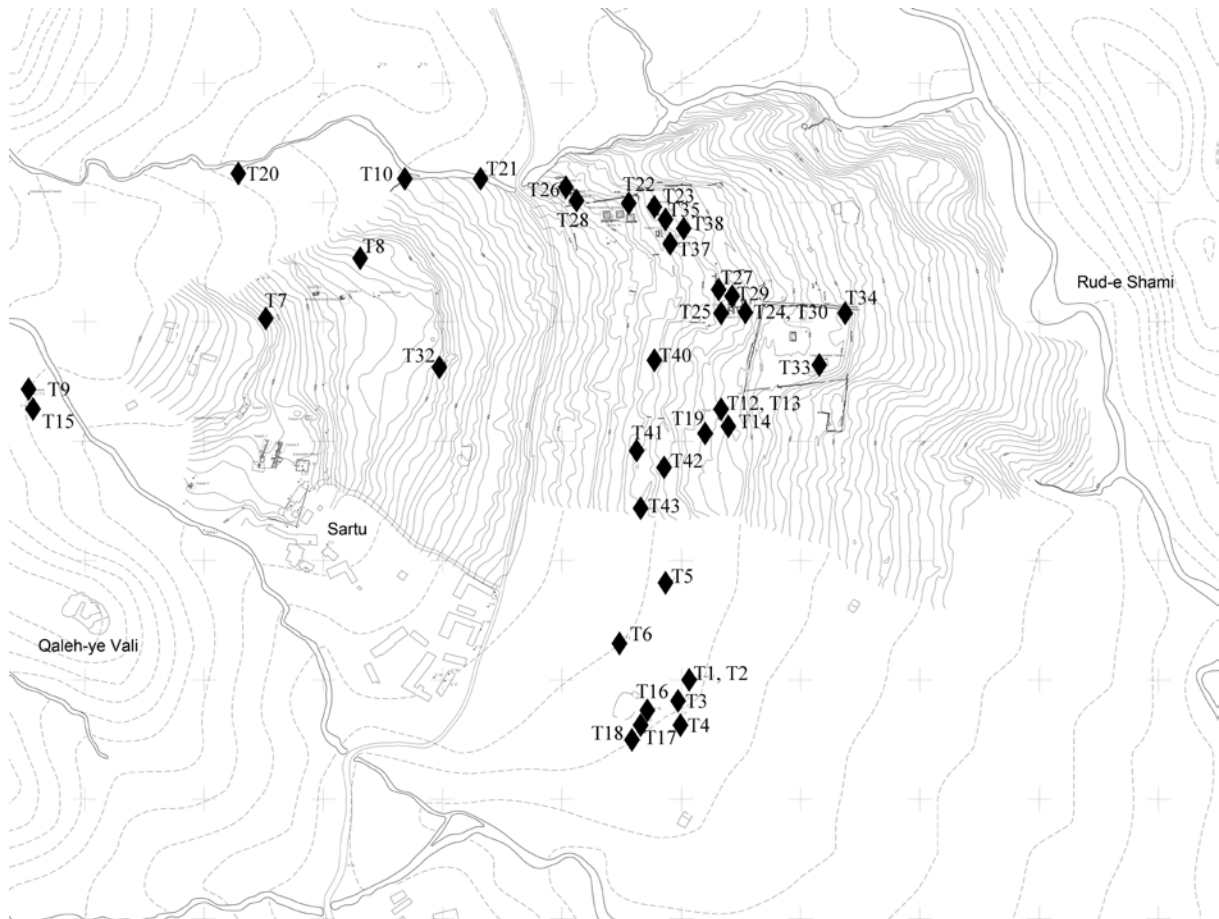


Figure 11.2 - Location of the surveyed underground tombs at Qal-e Chendar/Shami (elaboration by the author from the topographical map elaborated by N. Masturzo)

Few bone fragments were discovered in the chamber filling. Some objects belonging to the original funerary goods were recovered: a few beads in different materials and a pomegranate-shaped bead in gold (chapter 9, no. 13/SO09), fragments of iron blades (chapter 9, nos 58-61/SO04-07), and an interesting bronze pin decorated with a divine couple (chapter 9, no. 35/SO16). A half-complete glazed small pot (chapter 7, no. 26) and a glazed bowl (chapter 7, no. 1) were recovered too. These remains suggest that the chamber tomb was probably used to both male and female depositions, arguably related to the same family.

The tomb was covered at the end of the 2014 season to preserve its context.

Placement	Building technique and architectural layout	Findings
West Necropolis East-west orientation	Single chamber Dimensions: 1.60 x 2.60 m Floor with flat stone arranged with earth Mixed roof type (well preserved)	Pottery (chapter 7): nos 1, 26 Fragments of bones Small finds (chapter 9): nos 11/SO10, 13/SO09, 14/SO12, 18/SO11, 19/SO15, 20/SO13, 21/SO14, 35/SO16, 58/SO04, 59/SO05, 60/SO06, 61/SO07

11.2.2 Tomb 9 (T9) (Figs 6.45-6.46)

T9 was identified close to the south stream, near the main spring of the site. The walls of the rectangular chamber (4.5 x 2.4 m) are built in roughly cut stone blocks of different dimensions.

The entrance was originally opened to the east, even if this part is not preserved. Traces of a looting trench were detectable on the surface; the saddle-roof was almost entirely removed, and some slabs were lying on the surface close to the trench. After the removal of the filling layer of the room, a floor of flat irregular slabs was identified. This type of floor was found inside a few tombs at Kal-e Chendar, while earth-floors are the most common. The looting in the western part touched the structures in depth, reaching the foundations of the walls.

A low bench, 20 cm wide, composed of small flat stones and partially destroyed, was identified on the north side of the chamber. The room was 1.50-2 m high and, according to the ground morphology of the area, the main chamber was opened toward the east. A few diagnostic glazed sherds probably of the Parthian period were collected inside the tomb.

Placement	Building technique and architectural layout	Findings
West Necropolis East-west orientation	Single Chamber Dimensions: 4.5 x 2.4 m Benches Floor with flat stone slabs Saddle-roof	Pottery (chapter 7): nos 22, 45, 81, 82, 111, 114, 116

11.2.3 Tomb 20 (T20) (Figs 6.67-6.69)

T20 is located south of the north stream. The rectangular chamber (3.60 x 1.50 m) was opened to the north, even if a modern pillage trench destroyed the north part of the structure. It shows a saddle-roof reaching 1.40 m from the floor, made of small slabs. Benches are not attested along the walls. Numerous bones fragments were collected inside the filling layer of the chamber. These were related, according to their number and types, to almost three persons of different sex and age.

Two small bronze rings (chapter 9, nos 30/SO38, 32/SO56), some pottery vessels and sherds, including a Red Slip jug and bowl (chapter 7, nos 57, 59), belong to the original funerary goods.¹⁰ The chamber was buried at the end of the work season in 2014, to prevent other pillages and the collapse of the structure.

Placement	Building techniques and architectural layout	Findings
West necropolis North-south orientation	Single chamber Dimensions: 1.50 x 3.60 m Floor with flat stone slabs Saddle-roof	Pottery (chapter 7): nos 4, 13, 52, 57, 59, 88, 92 Bones Small finds (chapter 9): no. 30/SO38, no. 32/SO56

11.2.4 Tomb 23 (T23) (Figs 6.94-6.121)

During the 2014 season, T23, the biggest semi-underground tomb discovered at the site, was entirely excavated. It is located east of the main road, slightly east of the monumental platforms unearthed in Trench 13.¹¹ The tomb seems detectable in the plan drawn by Stein.¹² The complex plan of the tomb comprehends a main underground chamber connected to a stepped corridor with an east secondary chamber and a west niche. The corridor walls are almost parallel to a north-south wall discovered close to it, which functioned as an enclosure wall in the cemetery dividing it from a lower flat area identified to the east.¹³ The stepped corridor is composed of five steps of irregular slabs; the first one was discovered 50 cm from the ground surface. The stairway is 4 m long and 1.4 m wide while the threshold of the chamber is located 2.4 m below the surface. The retaining walls and steps were all

¹⁰ See chapter 7.

¹¹ See chapter 6, Trench 13.

¹² Stein 1940, 140, plan 10.

¹³ See Trench 9, chapter 6.

built at the same moment. In ancient times, the corridor was probably open to the sky, giving easy access to the entrance of the chamber opened to the south.

The secondary chamber (1.70 x 0.70 m), located to the east of the corridor, is covered with a saddle-roof, while its entrance is 40 cm wide and 60 cm high. The threshold is built with two undressed stones of big dimensions. At the time of the excavation, the entrance was found obstructed by small stone blocks. The presence of animal bone fragments not anatomically related inside the filling of the secondary chamber might suggest that rites were performed there, maybe for the deposition of new corpses in the main chamber or for periodical visits. Probably modern traces of fire and layers of ash were discovered on the walls of the secondary chamber.

The west niche is smaller in comparison with the east secondary chamber and covered with a single flat slab. The bones of a lamb or a kidskin were recovered in the filling layer, documenting the performance of rituals along the corridor and close to the tomb's main chamber.

The main chamber (4.5 x 2.4 m) is characterised by a monumental entrance measuring 70 x 100 cm. The walls are built with undressed irregular cut stones, larger at the bottom, providing better stability to the entire structure. The saddle-roof is composed of 14 flat irregular slabs placed in two rows of seven elements along the walls. The roof slabs lie on a frame of protruding stones on the lateral walls. Close to the entrance, a flat ceiling was detected, composed of irregular blocks, which are possibly a later restoration. The roof was probably originally completed with another two slabs, reaching sixteen slabs in all. The ancient unpreserved monolithic door was originally set in two pivot-stones, discovered inside the tomb, similarly to that recovered in T24, T26, T28. T23 was opened two times for the restoration of the ceiling, when the entrance was probably blocked with a re-employed flat slab, found broken in several pieces during the fieldwork. The tomb was successively pillaged from a pit-hole dug in the south ceiling, when the stepped corridor was already buried.

Three low benches were cleared along the west, north and east sides of the chamber. They are built with roubles and baked bricks placed in a regular pattern to define their limits. The benches were 20 cm from the earth floor. Few fragments of bones were discovered in the filling layers, attesting the repeated pillages throughout the centuries. On the north end wall is located a small niche (40 x 30 x 30 cm), possibly used in ancient times to hold a vase or a lamp.

Numerous fragments and objects of the original funerary set were recovered. On the north and east benches mouth coverings (chapter 9, nos 2-3/SO58-59), a bronze pin (chapter 9, no. 47/SO43), three bronze appliques (chapter 9, nos 40-42/SO44-SO46) with an unknown function, an agate bead (chapter 9, no. 17/SO66) and a bronze ring (chapter 9, no. 33/SO67) were discovered.

In the filling between the benches, a fragment of a gold diadem (chapter 9, no. 1/SO57), a bronze shallow bowl (chapter 9, no. 44/SO61), spoons in bronze (chapter 9, nos 47-48/SO43, SO62), a spatula (chapter 9, no. 38/SO63), an iron blade (chapter 9, no. 57/SO64) and a fragmentary bronze mirror (chapter 9, no. 37/SO65) were found.¹⁴

Twenty-eight complete or semi-complete vases were reassembled during the 7th and 8th working campaigns and come mainly from the fill located close to the door and discovered between the benches (Fig. 11.29): 10 glazed bowls (chapter 7, nos 5-9, 11-12, 14-16), 6 glazed jugs (chapter 7, nos 15-20), 3 amphoras and a pilgrim flask (chapter 7, nos 21, 23-24), 7 glazed amphoriskoi and small pots (chapter 7, nos 25, 29-34) a Red Slip amphora (chapter 7, no. 64), a Red Slip miniature pot (chapter 7, no. 65) and a partially preserved jar (chapter 7, no. 69). In the filling layers related to the tombs 133 pottery sherds were collected during the excavation. Light blue glazed vessels, dated mainly to the Parthian period, composed the majority of the pottery set preserved; nevertheless, three interesting complete

¹⁴ For a detailed description of the goods: see chapter 9.

vessels in Red Slip Ware could be chronologically more ancient, thus indicating a possible re-opening of the chamber for a long timespan.¹⁵

The types of funerary goods discovered demonstrate that both women and men were buried in the chamber. The pillage of T23 and the lack of bones made it impossible to know the exact number. Given the archaeological data and the architectural features, the tomb clearly belonged to a rich aristocratic group who decided to be buried in a monumental tomb, where rites were performed.

Placement	Building technique and architectural layout	Findings
East Necropolis North-south orientation	Main chamber with a secondary chamber and a niche Dimensions: 4.5 x 2.4 m Benches Earth floor Stepped corridor Saddle-roof	Pottery (chapter 7): nos 5-9, 11-12, 14-21, 23-25, 29-34, 37, 41, 43-44, 48-51, 58, 60-61, 64-66, 68-69, 71-73, 76-77, 80, 83-84, 87, 94, 98-99, 105, 109-110, 124, 126, 129. Bones Small finds (chapter 9): no. 1/SO57, no. 2/SO58, no. 3/SO59, no. 5/SO42, no. 6/SO60, no. 7/SO68, no. 8/SO69, no. 9/SO70, no. 15/SO40, no. 17/SO66, no. 22/SO41, no. 29/SO72, no. 33/SO67, no. 34/SO71, no. 37/SO65, no. 38/SO63, no. 39/SO55, no. 40/SO44, no. 41/SO45, no. 42/SO46, no. 44/SO61, no. 45/SO37, no. 47/SO43, no. 48/SO62, no. 51/SO39, no. 57/SO64, no. 62/SO01, no. 63/SO02, no. 65/SO08, no. 66/SO47, no. 67/SO48, no. 68/SO49, no. 69/SO50, no. 70/SO51, no. 71/SO52, no. 72/SO53, no. 73/SO54

11.2.5 Tomb 24 (T24) (Figs 6.149-6.154)

T24 is placed in a flat area south-east of T23, close to T25 and T27. The unearthed main chamber (4 x 2 m) was damaged by several pillage trenches and set after the Parthian period as part of a much later domestic complex unearthed in Trench 10¹⁶. The roof collapsed entirely inside the tomb; it was composed of long irregular slabs similar to those employed in T23. Given the architectural features, the entrance, even if not well preserved, was surely placed on the south side of the tomb, where the limit of a threshold is identifiable.

The stone monolithic door is laid on the superficial layers close to the east wall. It was carved from a single stone block measuring 76 x 100 x 20 cm. The external part was carved as a 'false wooden door', with two crossing stripes. Similar doors were discovered during the excavations of T26 and T28. No pivot-stones were detected inside the chamber. The walls of Tomb 24, built with medium stone blocks, are wider in comparison to the walls of other tombs, reaching 80 cm. A large bench is still preserved on the rear wall. In the filling layers of the tomb, no funerary goods or bone fragments were identified. Only a few sherds were recovered because of repeated pillages and the re-use of the tomb during the Islamic period. T24 was re-buried at the end of 2015 season.

¹⁵ For typology, chronology and function of the vessels found here, see chapter 7.

¹⁶ See chapter 6.

Placement	Building technique and architectural layout	Findings
East Necropolis North-south orientation	Chamber Dimensions: 4 x 2 m Benches Earth floor Entirely collapsed roof Preserved door	Pottery (chapter 7): nos 36, 128

11.2.6 Tomb 25 (T25) (Figs 6.156-6.159)

T25, oriented north-south like T24, is located west of Trench 10, identified as a domestic complex of much later date. The tomb is composed of a large chamber (4.20 x 2.10 m) and a narrow stepped corridor (1 m wide). Some irregular stone steps made with flat slabs are preserved, reaching the chamber threshold (93 x 25 x 20 cm). A niche (40 x 40 x 40 cm), blocked with small stones, was identified on the east wall of the corridor. A single roughly cut block was used as lintel for the niche, similarly to the west niche of T23. The discovery of animal bone remains, mainly of lambs and skinkins in the filling layer, may suggest the use of this space for particular rites. According to the archaeological data, the corridor was covered with monolithic slabs discovered on the ground nearby and in situ.

A single stone threshold (90 x 70 cm) connected the corridor to the main chamber. The stone jambs are partially preserved (20 x 12 x 25 cm), while a thin flat slab, possibly used as a reemployed door, was found in fragments close to the surface (50 x 35 cm). The monolithic lintel is partially broken.

The inner walls are made with bigger, roughly cut stone blocks arranged at the bottom to give the entire structure better stability. A saddle-roof made of almost five slabs for the side covers the chamber, starting from a protruding row of blocks on the lateral walls. Three slabs still lay in their original position at the time of the excavation of spring 2016. On the rear wall, two ledges stand at different elevations, unlike all the other tombs discovered at the site. The first ledge is a single stone slab (62 x 30 x 15 cm) placed at the middle of the rear wall; the second one (40 x 34 x 11 cm) is lower and located east of the first and discovered broken during the excavation. A basement in stone was discovered close to the ledges, which may be interpreted as a small altar.¹⁷ In the filling layer of the chamber, fragments of human bones, also including a skull and parts of legs and arms not anatomically related were identified. No benches along the lateral walls of the chamber were detected.

Placement	Building technique and architectural layout	Findings
East Necropolis East-west orientation	Chamber with a secondary chamber along the corridor Dimensions: 4.20 x 2.10 m Earth floor Stepped corridor Saddle-roof	Bones

11.2.7 Tomb 26 (T26) (Figs 6.129-6.134; Fig. 6.140)

T26 is placed east of the modern road, north-west of Platforms 1-3. Tomb 26 (2.60 x 2.10 m) is close to T28 and part of an interesting funerary complex comprehending several rooms and a small open court (C1), where these two tombs are opened.¹⁸ During the archaeological campaign of 2016, several rooms outlined by walls in undressed stones (Trench 14) were cleared, testifying the complexity of this part of the cemetery. Near the eastern wall of the court, where T28 and T26 are located, a cist grave in bricks (Gr2) was discovered.

¹⁷ The altar was not catalogued by the Iranian Expedition during the excavation and for this reason it is not considered in chapter 9.

¹⁸ See chapter 6, Trenches 14 and 15.

In this open area, connected with a threshold to other unexplored areas to the north, rites and ceremonies were probably performed, given the discovery of a small censer (no. 79; SO94) in the filling layers of blocks and rubble found. Tomb 26's entrance opens to the east and is bounded with two rectangular buttresses: 40 cm wide and 1.05 m. high. The preserved lintel (100 x 60 x 25 cm) rests on two stone jambs (35 x 40 x 105 cm). The entrance is displaced slightly to the north. The court's floor is made of a layer of small pebbles and earth. A monumental monolithic stone door (130 x 80 x 10 cm), found opened towards the inner side of the chamber, was discovered still standing during the excavation close to the entrance and was used to seal the chamber. It is carved as a false wooden door on the outer face, similar to that of T24 and T28, with two crossing protruding stripes. The door is set in two pivot-stones still in place. Two holes for the lock of the door were identified.

The chamber, 3.60 m long and 2.40 m wide, is built with rectangular roughly cut stones. At the top of the rear wall is an inner splayed opening, which connects this space to a room located behind it, partially explored during the spring campaign of 2016. This is the only tomb showing this type of window on the rear wall, also because the funerary chambers are usually located underground with three walls built against the ground. Given that the parts of the wall preserved close to the opening are arranged with small and medium size stones unlike the other walls, it is possible to suggest that they were subsequently restored. The roof slabs composing the saddle-roof are set on a protruding row of stones as cornice. Four roof slabs placed in the rear part of the tomb were still in place during the excavation. Given the dimensions of the chamber, it is possible to suggest six slabs were used on each side to complete the ceiling and one or two long flat slabs for the entrance area, where a long slab was identified close to the southern wall.

Well-preserved benches 50 cm wide and 24 cm high are set against the lateral walls, built with irregular stone blocks. On the corner between the west and north benches, a human skull and a goat/sheep jaw were found.

The tomb was pillaged during ancient times, entering from a hole on the ceiling or directly from the main door. In the filling layer between the benches, several fragments of bones were collected.

Placement	Building technique and architectural layout	Findings
East Necropolis East/West Orientation	Chamber Dimensions: 3.60 x 2.40 m Benches along the three walls Earth floor Preserved entrance Saddle-roof or mixed roof Preserved door	Bones: human skull and an animal jaw Small finds (chapter 9): no. 24/SO90, no. 25/SO91, no. 43/SO85

11.2.8 Tomb 27 (T27) (Figs 6.160)

T27, excavated in 2016, is located close to Trench 10. It was identifiable on the ground because it had been heavily pillaged. The chamber (c. 3.50 x 1.90 m) opens to the east and its walls are well preserved. The walls are built with roughly cut stone blocks of medium size. The rear wall does not show the presence of a niche or other architectural features. The saddle-roof is well-preserved in the western and central part of the tomb. It is composed of long heavy stone slabs (c. 100 x 60 cm) of bigger dimension in comparison to the other monumental tombs discovered at the site (T23, T25, T26 and T28). The slabs close to the entrance were removed and set on the ground by the looters to reach the chamber easily. No lateral benches were found inside, while the pavement was arranged with simple earth. A carnelian bead (no. 12/SO88) was collected in the filling of the chamber.

Placement	Building technique and architectural layout	Findings
Est Necropolis East-west orientation	Chamber Dimensions: 3.50 x 1.90 m Earth floor Preserved entrance Saddle-Roof	Small finds (chapter 9): no. 12/SO88

11.2.9 Tomb 28 (T28) (Figs 6.127, 6.129, 6.135-6.142)

T28 is placed close to T26, east of the main road. It is built on the south side of the court (C1), while Tomb 26 stands on the west side. During the excavation, the entrance was found blocked with baked brick, probably set there after the first ancient looting. The tomb was surely pillaged by looters who reached the chamber from the ceiling, which was completely removed, or from the entrance which was found opened. The walls of the main room (c. 3.70 x 2.20 m) are built with roughly cut blocks, employing a building technique widely found at the site. On the rear wall, a small niche is opened (60 x 37 x 26 cm) in axis with the entrance.

The roof is entirely missing, but given the presence of a row of stones, the tomb most likely had a saddle-roof, as in other funerary chambers at Kal-e Chendar. Benches in stone along the inner chamber walls lack, even if numerous squared baked bricks were found displaced and could have been used for building platforms or benches with funerary purposes. The brick module (35/6 x 35/6 x 8 cm) is the same one employed in the structures or arrangements of Trench 3 and the altars of Stein Terrace. The bricks may also be the result of a collapse after the removal of the ceiling and thus related to other structures made in baked bricks close to the tomb. A cist child grave (Gr3) in bricks is buried inside the chamber close to the entrance and the east wall. The monolithic stone door (129 x 85 x 10 cm) set in two pivot-stones still in place is well preserved and it was found opened inward during the spring excavation of 2016. The Iranian team found the entrance blocked from the courtyard (C1) with baked bricks. This arrangement was probably set after a first looting of the tomb. The outer face of the door, which shows an interesting lock-hole (diam. 7 cm), is decorated with two simple incised lines, unlike T24 and T26.

Two gold foil fragments (chapter 9, nos 4, 10/SO8, SO82) and a glass perfume bottle (chapter 9, no. 50/SO80) are the main remains of the original funerary goods set along with 2nd century CE coin (chapter 9, no. 83/C04).¹⁹

Placement	Building technique and architectural layout	Findings
Est Necropolis North-south orientation	Single chamber Dimensions: 3.70 x 2.20 m Benches in bricks (?) Earth floor Preserved entrance The roof lacks Preserved door	Small finds (chapter 9): no. 4 /SO81, no. 10/SO82, no. 50/SO80, no. 77/SO95, no. 83/C04

11.2.10 Cist graves

Grave 1 (Gr1) (Figs 6.143, 6.155)

Gr1 is located inside the domestic complex of Trench 10. The grave was found in one of the north rooms, close to the trench limit. It is a cist grave made with simple stone slabs placed in the ground. The short side with a north-south orientation is composed of a single stone slab, while the long side comprehends two juxtaposed slabs. The north slab is 60 cm long, the east side 130 cm long, the south

¹⁹ Several small objects were recovered inside Gr3 (see below). For the discussion about coins and their chronology see chapter 9.

side 54 cm long, while the west side is 128 cm long. The slabs are 3-8 cm thick. Given the dimensions of the closing stone slab (64 x 44 x 4 cm), the grave was not entirely covered.

In the filling layer, about 20 cm high, some animal bone fragments, ashes and pottery sherds were collected. Below this layer, the remains of two children were discovered, with the skulls placed respectively north and south. Skeleton bones anatomically connected were not discovered.

Grave 2 (Gr2) (Figs 6.127, 6.131, 6.142)

Gr2 is a child cist grave excavated below the earth floor of the court (C1) where T26 and T28 are opened. The grave is placed close to the east court wall, exposed exclusively on its inner layout. Square bricks (36 x 36 x 7 cm) outline the limits of the cist: two bricks are used for the long side (c. 75 cm long) and one for the short side. This module is attested at the site in Trench 3 and for the structures in brick discovered on the Stein terrace. Two bricks compose the bottom of the grave. The body of the child lying on its right side was in anatomical connection with bent legs; the head was found in the south part of the grave.

The funerary goods were composed of a glass perfume bottle (chapter 9, no. 49/SO79), similar in shape to a specimen discovered in T28 (chapter 9, no. 50/SO 80), a small spouted glazed pot (chapter 7, no. 28) and a carinated bowl (chapter 7, no. 10). The covering of the grave was missing at the moment of the excavation.

Grave 3 (Gr3) (Figs 6.127, 6.141)

The child cist Gr3 was discovered under the floor of T28, close to the entrance and near its east wall. The limits of the cist are outlined with vertical baked bricks. Two square bricks (35/6 x 35/6 x 8 cm) define the long side, reaching 75 cm in length. The short side is made with a single square brick and a stone fragment. The top of the grave was closed with two square bricks. In the filling layer, some bone fragments (teeth and phalanxes) were discovered. Several beads of different materials (chapter 9, nos 16, 23, 26, 27 28, 26/SO89, SO87, SO86, SO92, SO93), a bronze ring (chapter 9, no. 31/SO 83) and a bronze pin (chapter 9, no. 36/SO 84) and a perfume bottle (chapter 9, no. 49/SO79) were parts of the original funerary set.

11. 3 Tombs' setting and distribution

The tombs discovered at Kal-e Chendar are located mainly in the eastern part of the surveyed site, slightly east of the modern road crossing the village (T1-T6, T11-14, T16-19, T23-28, T33-36) (Fig. 11.2). A cluster of these underground structures was recognised here in an area where the main core of the ancient cemetery was placed. The modern street probably followed an ancient route, which was perhaps also in use, in some points, at the time of the necropolis, with a similar layout of the path drawn on Stein's map.

In some cases, the tombs are built close to each other, showing a similar orientation and possibly a 'plan' in their distribution (i.e. T26 and T28; T25 and T24). For this reason, it is possible to suggest that their position was already known because of the existence of a small mound over the chamber, funerary-markers and visible façades, allowing easy access to the chambers and their re-opening for new depositions or periodical rites.

The tombs in the s.-c. East Necropolis were built on low terraces and inside flat natural areas delimited by walls or wallets in stone, as the one probably identified in Trench 9, which is parallel to the eastern wall of T23, the biggest tomb discovered at the site (Fig. 11.3).²⁰ Different tombs were most likely linked together thanks to routes or paths, which are difficult to detect without wider archaeological excavations.

²⁰ See chapter 6, Trench 9.



Figure 11.3 - Wall of Trench 9, close to T23

In the eastern space devoted to burials, characterised by limits still difficult to identify, huge terracing walls, made of big, undressed stone blocks are recognisable. One of the delimiting Terrace 4 (Figs 4.3-4.4) was clearly visible on satellite images in the lower part of the colluvial fan.²¹ Some tombs (T31, T33 and T34) and other collapsed structures were detected on it, and without new excavations their context remains uncertain.

During 2016 campaign, a wide area of about 115 m² located east of the road was cleared by the Iranian team. It has allowed for better understanding of the features and complexity of this part of the cemetery (Figs 11.4-11.5). Through an open court (C1) measuring c. 5.30 x 3.50 m, two chamber tombs were accessible: T26, built along the west side, and T28, located on the south side. West of T26, several rooms, walls and a corridor were cleared. Walls continued across the limits of the excavation, while the function of this complex is not yet entirely understood. Given the plan and features of the area with tombs and structures, it is clear that these underground chambers were accessible and visible directly from the open court, where rites and offering were performed, based on the discovery of a small altar (chapter 9, no. 79/SO94), and a stone basis (Fig. 11.6). If the rooms located behind T26 were built at the same time of the tomb, this would be the only chamber tomb entirely built on the four sides, unlike the other semi-underground or underground structures surveyed at Kal-e Chendar. T28 is built against the ground on three sides, while its saddle-roof, entirely removed by the looters, may have been covered with earth to form a low mound.

²¹ See chapter 4.



Figure 11.4 - Iranian excavation trenches (Trenches 14, 15, 18)



Figure 11.5 - Open court in front of T26 and T28



Figure 11.6 - Small censer (no. 79/SO94)

South-west of the trenches, where these two tombs are placed (Trenches 14, 15, and 18), a badly preserved stairway built to access the North Terrace allowed to reach three monumental platforms in stone erected on the top.²² These impressive funerary monuments were probably used for rituals.²³ This area discloses the complexity and interrelations of different types of structures in the ancient cemetery, where buildings for rites and other purposes stand close to funerary structures.

West of the modern road, toward the mountain, in a wide area where different sacred terraces were identified, eight tombs were surveyed (T7, T8, T9, T10, T15, T20, T21, T32): only three of them have been excavated (T7, T9, T20).

T9 and T20 were placed alongside the north and south streams, while T7 stands between the Upper Terrace and Terrace 2. The tombs identified here are all single underground chambers with a simple plan, showing a lower architectural and plan variety in comparison to the underground funerary buildings located in the part of the cemetery east of the road.

The location of these few western tombs is extremely interesting because they emphasize an overlap or a close proximity of funerary

structures with the sacred space of the Upper Terrace, according to the results of Stein's excavation and of our research. The presence of tombs built together with religious buildings is an exception in comparison with other well-known excavated or surveyed sanctuaries in the region (Bard-e Neshandeh, Majid-e Sulayman²⁴ and Qal'e-ye Bardi²⁵). The platform and temple discovered at Kangavar are located close to a cemetery of the Parthian period. Kambash Fard, the most prominent archaeologist who excavated the site, suggested that the main temple was devoted to Anahita, supporting the correspondence proposed by Isidorus of Charax, and constructed in the Parthian period with a similar chronology to the discovered tombs.²⁶ Azarnoush and large part of the scientific community dated however the temple area to the Sasanian period, testifying a different chronological frame for the building and the tombs.²⁷

Even if sanctuaries were usually separated from necropoleis, which lie outside the cities in the Greek world, during the Hellenistic period some exceptions are detectable, for instance, in Caria (Western Anatolia) where monumental tombs lined the road leading to suburban sanctuaries and the position of tombs varied. Burial places were located, in fact, near the temenos wall or even in the temenos itself.²⁸ Some exceptional burials in vases may constitute another exception in the Hellenistic period,

²² See chapter 6.

²³ See chapter 6.

²⁴ Ghirshmann 1976.

²⁵ Messina 2018. Some tombs were also identified in the area of Majid-e Sulayman and Bard-e Neshandeh, but these structures are not placed close to the sanctuary. Only two ruined structures, possibly identified as tombs, were discovered 300 m from the terrace of Bard-e Neshandeh. No chronological information is related, however, to these tombs (Sardari Zarchi et al. 2014, 72). Wide necropoleis like the one attested at Kal-e Chendar have not yet been recognised.

²⁶ Alibaigi 2017, 8.

²⁷ Kleiss 2010 and bibliography.

²⁸ Novàková 2012, 198. For an overview about the organisation of Macedonian cemeteries (Kakamanoudis 2019).

as documented by some recent discoveries made close to the sanctuary of Aegae. In a ditch, some metallic and pottery vases showing incineration practices and many luxuries funerary goods very close to Temple II were recovered.²⁹

The same chronological timeframe of the shrine built on the Upper Terrace and the tombs strengthens the assumption that cemetery and sacred spaces coexisted at Kal-e Chendar. From the objects recovered on the Upper Terrace, especially bronze statue fragments, it may be presumed that the shrine was in use at least since the Seleucid period³⁰ and was still frequented in the Parthian period, as attested by the discovery of the famous bronze statue of the ‘Nobleman of Kal-e Chendar’. The shrine was destroyed during the post-Parthian period, probably by fire, according to the ash layers identified during Stein’s excavation.³¹ The surveyed tombs show a similar chronology (3rd century BCE to the first half of the 1st century CE), defined by pottery assemblages and the small objects recovered. Basing on archaeological records in funerary sets, nevertheless, it is impossible to exclude that some of the tombs had a longer continuity, perhaps up to the end of the Parthian period (3rd cent. CE).

11.4 General architectural features, ritual/funerary practices and grave goods at Kal-e Chendar

The underground and semi-underground tombs at Kal-e Chendar are not homogeneous regarding entrance orientation, compared with other funerary contexts of particular religious or ritual purposes. In the catalogue of the excavated tombs, five show an east-west orientation and four a north-south setting. All the east-west tombs have entrances opening to the east toward the valley, employing the natural slope to cover the roof.

Most of the tombs are composed of a single main chamber with direct access, while only in two cases (T23 and T25) it is possible to identify a corridor with a stairway, niches and secondary chambers on the sides (Figs 11.7-11.9). Based on the archaeological finds, the niches and the secondary chambers were probably employed to perform particular rituals and leaving food offerings, usually lambs or kidskins given the osteological remains identified, and pouring libations to the dead. The practice of the funerary meal, a mortuary banquet (at the time of the burial) and regular offerings attested in Mesopotamia since the most ancient times,³² was widespread during the Seleucid and Parthian periods in different archaeological funerary contexts of Mesopotamia and Iran, and borne out by the identification of defleshing, cut and burnt bones in graves, near and in coffins and inside underground funerary chambers.³³ An interesting example in this sense is the recovery of animal bone fragments, eggshells and eating and drinking’s sets (iron knives, a bronze ladle) in pit underground chambers of the Ville des Artisans at Susa.³⁴ Fragments of an iron knife were also recovered inside T23 and T7, possibly indicating that the same practice was likely carried out there.

The underground chambers are almost uniform in dimensions (length, height, width); only four cases exceed 4 m in length (T20, T23, T24, T25), also corresponding to the most complex chamber tombs so far discovered. Only T23 reaches 1.50 m in height, facilitating an easy placement of the dead on the lateral benches. The dimensions of the main chambers are usually similar to, or slightly bigger than, the Parthian chamber tombs constructed in baked bricks discovered at Gelalak,³⁵ Susa (Ville

²⁹ Kyriakou 2014, 253-258.

³⁰ For the reconstruction of the male Hellenistic statue and its probable identification (Lindström 2019).

³¹ Stein 1940, 146, 149-150.

³² See for instance Winter 1999, 251; Katz, Oosten 2007; Pollock 2008, 26-27; Heinz 2012, 1-4.

³³ Boucharlat, Haerinck 2011, 35.

³⁴ Boucharlat, Haerinck 2011, 35.

³⁵ The three underground chamber tombs of Gelalak are 3-3.50 x 2-2.70 m (Rahbar 1999, 92).

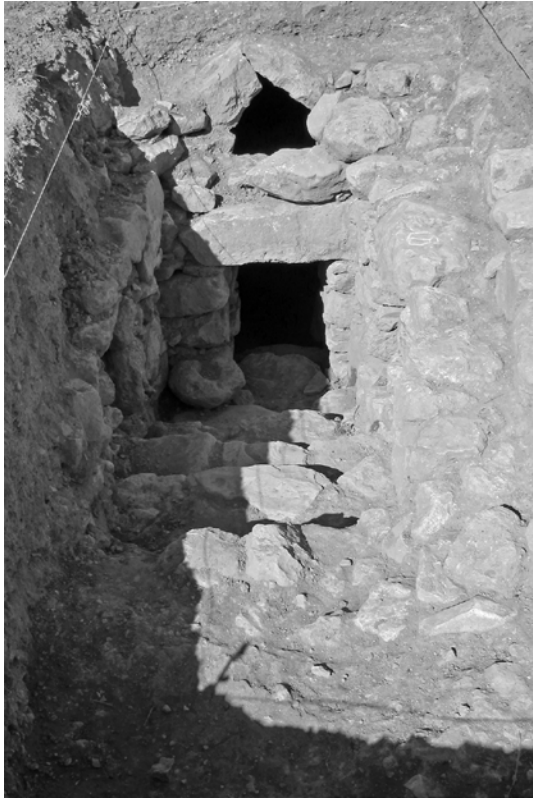


Figure 11.7 - T23, picture taken from south; T25, picture taken from east



Figure 11.8 - Niche and Secondary Chamber of T23

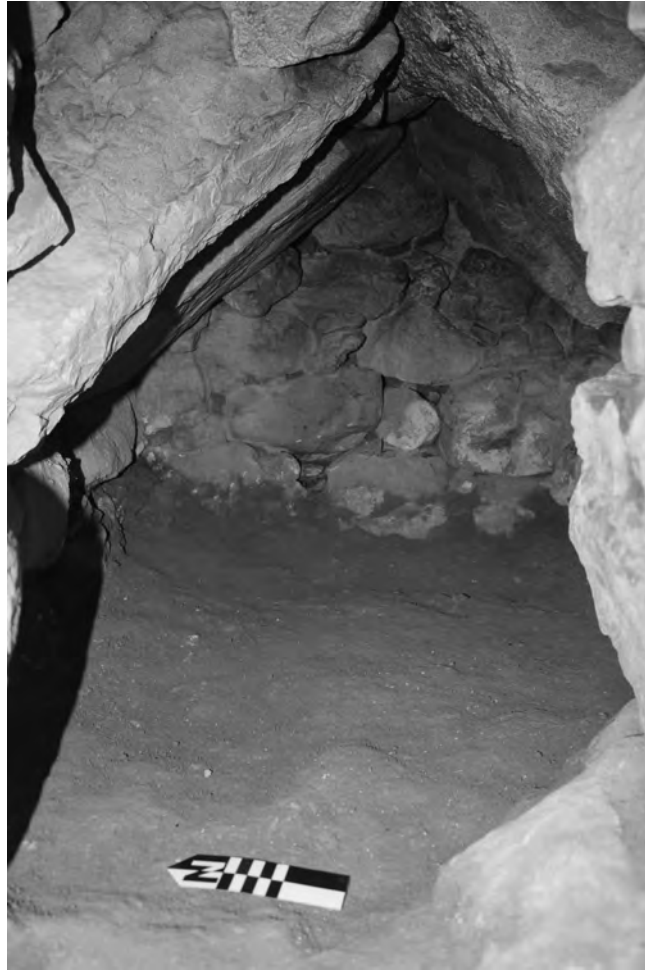


Figure 11.9 - Secondary Chamber of T23

des Artisans),³⁶ Seleucia on the Tigris,³⁷ Coche-Veh Ardashir³⁸ and Ashur³⁹ or the underground tomb built in stone discovered at Cheram (Kohgiluyeh-va Boyer-Ahmad, south-west Iran).⁴⁰ The latter is the best comparison with the tombs of Kal-e Chendar, showing, however, a flat roof composed of several monolithic slabs, which is completely lacking at Kal-e Chendar.

Cist graves outlined with stones and big capstones as a roof, partially similar to that used for the Kal-e Chendar's tombs, are common in the Hellenistic and Parthian periods, for instance in several Parthian necropolis in Iran,⁴¹ in the cemetery of Jebel Khalid and other necropoleis in Syria⁴² as well as in several cemeteries from the Hellenistic and Parthian periods (Tylos period) discovered in the

³⁶ Tomb 1: 2.50 x 2.96 m; Tomb 2: 1.90 x 2.50 m; Tomb 3: 3.26 x 2.60 m; Tomb 4: 3.35 x 3.50 m; Tomb 5: 2.10 x 2.80 m; Tomb 6: 3.25 x 1.90 m (Boucharlat, Haerincq 2011, 64).

³⁷ The chamber Tomb 46 discovered in the area of the Building of the Archive (amb. 108) is 3.75 x 2.6 m and 2.2 m high, while Tomb 33 (room 19), localised in the same area, is smaller: 3.8 x 1.2 m and 1.73 m high (Invernizzi 1973-4, 12-13; Messina 2006, 192). A tomb of smaller dimensions was discovered in the southern area of the South Square of Seleucia on the Tigris (Negro Ponzi 1972, 25, fig. 9). A small chamber tomb, possibly for a single burial, was excavated on the upper layer of the Stoa, on the other side of the Archive Building (Valtz 1988, 23, T5, fig. 11, lev. IV). Some chamber tombs were also found under the Block G6. Tomb 131 (court 64 - layer I) is 3.35 x 2.6 m and about 2m high (Yeivin 1933, 49, 51, fig. 8), which is similar in dimensions to the examples from Kal-e Chendar. Tomb no. 159, the biggest from Seleucia (layer II), 5 m long, 4 wide and 2.5 m high, shows numerous loculi inside (Yeivin 1933, 53, fig. 9; Hopkins 1972, 68, 78). Tomb no. 2 was discovered close to Block G6 and was possibly related to layers II-III. It is 3 x 4.20 m and 2m high (Yeivin 1933, 54, 55, fig. 10), while Tomb no. 216 (layer III) is 2.80 m long and 2.40 m wide (Yeivin 1933, 59, 58, fig. 11).

³⁸ The two vaulted tombs from the Parthian period discovered by the German Expedition in the area of Coche/Veh Ardashir at 300 m at Qasr Bint el Qadi are 3.60 x 3.49 and 2.70 x 1.70 m (Hauser 1993, 335-336).

³⁹ Andrae, Lenzen 1933, 97-98; Wright 2011.

⁴⁰ 3.80 x 1.30 m; h. 1 m (Roustaei, Azadi 2011, 196).

⁴¹ See for instance, Germei (Azerbaijan), Tal-e Malyan (Fars), Dam Chafat, Paliyah; the graveyards of Shahpir and the Sang-e Shir necropolis show oval coffins, covered with slabs (Farjamirad 2015, 16-18).

⁴² Littleton et al. 1996-7, 190; Littleton, Frohlich 2002, 55-60. Similar cist tombs were discovered in different Syrian sites. Unfortunately, several cannot be dated because they were heavily plundered: Littleton et al. 1996-7, 204; Sartre 1989, 423-424.

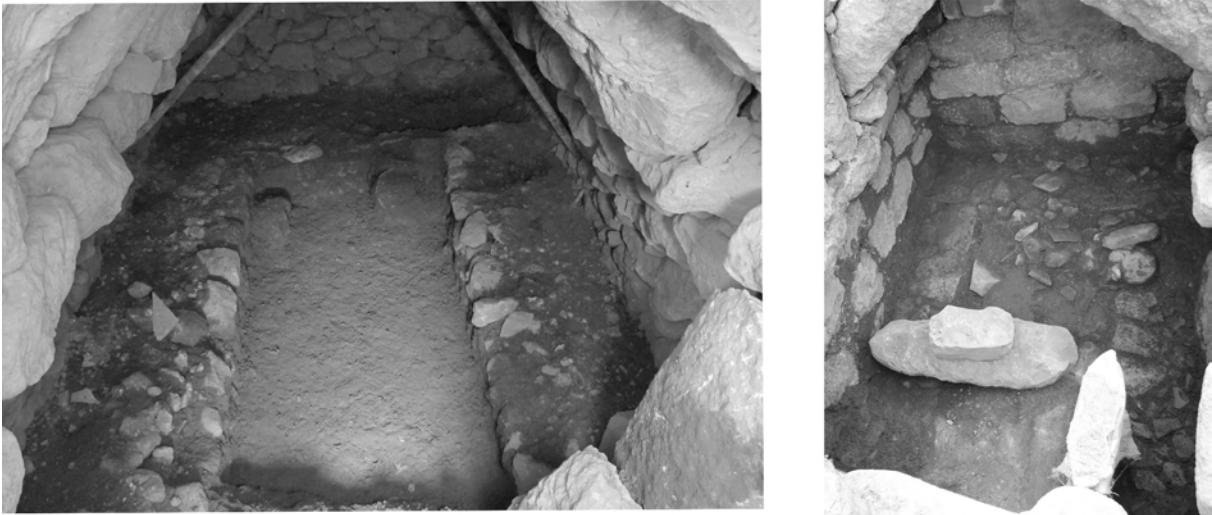


Figure 11.10 - Benches on three sides of the tombs 23 and 26

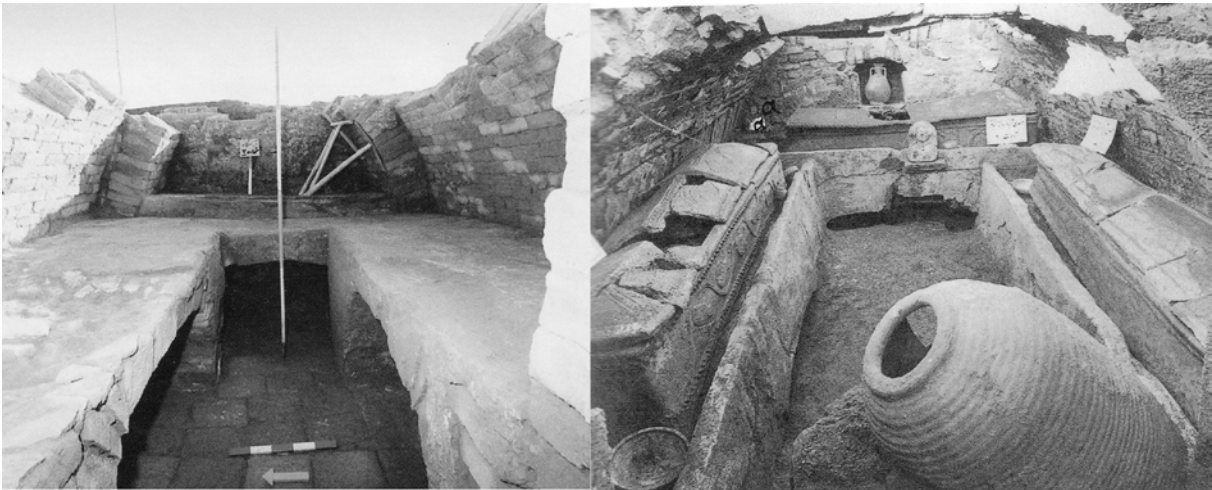


Figure 11.11 - Tomb 2 (Rahbar 1999, 92) and Tomb 1 (Rahbar 2007, 469, Figure 16).

Persian Gulf.⁴³ Chambers with walls in undressed stones and a roof made of slabs are also similar to some chamber mounds of the Hellenistic and Parthian periods discovered in Iran,⁴⁴ Iraq⁴⁵ and close to the Persian Gulf.⁴⁶

Chamber tombs comparable with the one identified at Kal-e Chendar were discovered by the Iranian Department of Antiquities at the village of Piyun, located at the beginning of the Valley of Kal-e Chendar. According to Godard, during the Hellenistic and Parthian periods, here a small town with a cemetery was settled. Unfortunately, the documentation of these funerary structures, built with rough stone blocks and monolithic saddle-roof slabs, has not yet been published.⁴⁷

Benches are identifiable inside five of the excavated chamber tombs (T9, T23, T24, T26 and T28). In some cases they are built with flat stone slabs (T9), in others with earth mixed with stones (T23 e

⁴³ Al-Sindi, Ibrahim 1999, 156-157. Sometimes the cist tombs were covered by mounds as in the cases of The Hamad town cemetery and the Shakhoura cemetery in Bahrein (Andersen 2009, 167-171).

⁴⁴ See the cairn burials of Dambakouh and Qasr-e Abu Nasr (Farjamirad 2015, 21).

⁴⁵ The chambers of the Uruk's cairns made in baked bricks are only slightly comparable for their building techniques with the tombs of Kal-e Chendar (Pedde 1995, 140-152).

⁴⁶ Cleuziou et al. 1981, 6-11.

⁴⁷ Godard 1962, 179.



Figure 11.12 - Tomb of Saleh-Davud (Rahbar 2007, 470, Figure 18)

T24), and in only one case they could have been made in baked bricks (T28).⁴⁸ In two cases (T23, T26) they were built on three sides of the tomb (Fig. 11.10); while the benches of T9 and T24 were built exclusively against the north wall, corresponding to the rear-wall of the tomb. The benches of T23 and T24 are 50-80 cm wide and 20-25 cm high from the ground floor. The width of the benches is similar to other structures found in the Parthian chambers discovered at Gelalak (Fig. 11.11),⁴⁹ Saleh Davud (east of Eyan-e Karkeh) (Fig. 11.12),⁵⁰ and in the chamber tombs of the Ville des Artisans at Susa (Fig. 11.13),⁵¹ but also in some catacombs of the necropolis of Dura Europos.⁵² The three underground chamber tombs of Gelalak, all accessible by stairways, show peculiar lateral benches built on sustaining arches made with baked bricks. Interestingly, the bellowed hollow part of the benches was used to contain burials and bone fragments, probably of the same family members. Benches have also been recognised inside the Darreh Doz rock cut tomb B (25 km north of Izeh), where three benches occupy the whole length of the walls.⁵³ Lateral benches were widely used in Hellenistic chambers and monumental tombs, probably to imitate the position of funeral banqueting, and were also common in funerary chambers of the Parthian-Roman periods.⁵⁴

The bodies in the smaller chamber tombs of Kal-e Chendar were probably laid directly on the earth-floor, as in other funerary contexts in Iran and Mesopotamia,⁵⁵ while in the bigger chamber tombs

⁴⁸ The bench of T9 is badly preserved and cannot be compared with structures preserved in other tombs, while for T28 it is possible to suggest the presence of a baked brick bench, now lost.

⁴⁹ Tomb 1 shows benches ca. 70 cm wide, where three decorated glazed coffins were laid (Rahbar 1999, 92).

⁵⁰ Rahbar 2007, 468. Larger platforms can be recognised in the tomb complex of Valiran (South of Damavand) used to place corpses, after the decomposition of the body the skeletal remains were deposited into small cavities next to the platforms (Farjamirad 2015, 19).

⁵¹ Regarding the benches, Vaulted Tomb 1, 70-76 cm wide and 76 cm high (Boucharlat, Haerinck 2011, 61); Vaulted Tomb 2, 60-65 cm wide (laterals); 85 cm wide and 27 cm high (Boucharlat, Haerinck 2011, pl. 13); Vaulted Tomb 3, 80 cm -1 m wide (Boucharlat, Haerinck 2011, 62); Vaulted Tomb 4, ca. 1 m wide (Boucharlat, Haerinck 2011, pl. 20); Vaulted Tomb 5, 50-60 cm wide (Boucharlat, Haerinck 2011, pl. 26); Vaulted Tomb 6, ab.70 cm wide (Boucharlat, Haerinck 2011, pl. 30).

⁵² 'Catacombs classified as Group II have the aspect of small underground chambers with flat ceilings and two or three benches -klinai- 60 to 80 cm high, along the walls. They could accommodate two or three burials' (Toll 1946, 9-10).

⁵³ Farjamirad 2015, 21-22.

⁵⁴ Kakamonoudis 2019, 164-168.

⁵⁵ Azandaryani et al. 2016, 2-3.

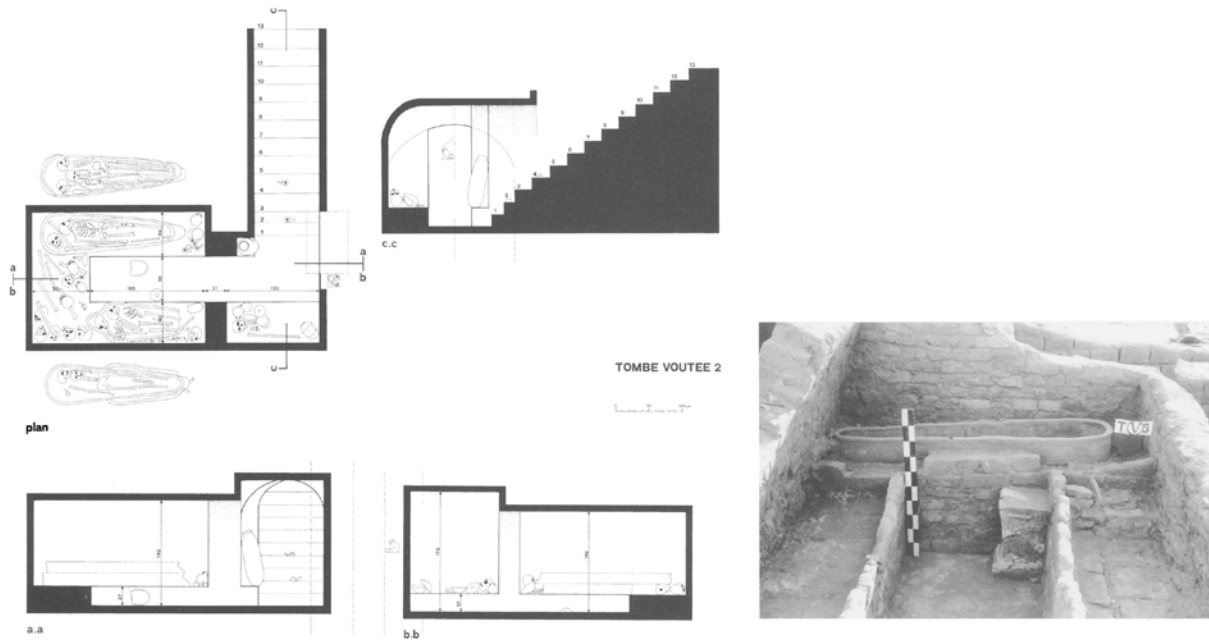


Figure 11.13 - Underground tomb 2 - Ville des Artisans at Susa (Boucharlat, Haerinck 2011, Pl. 13).

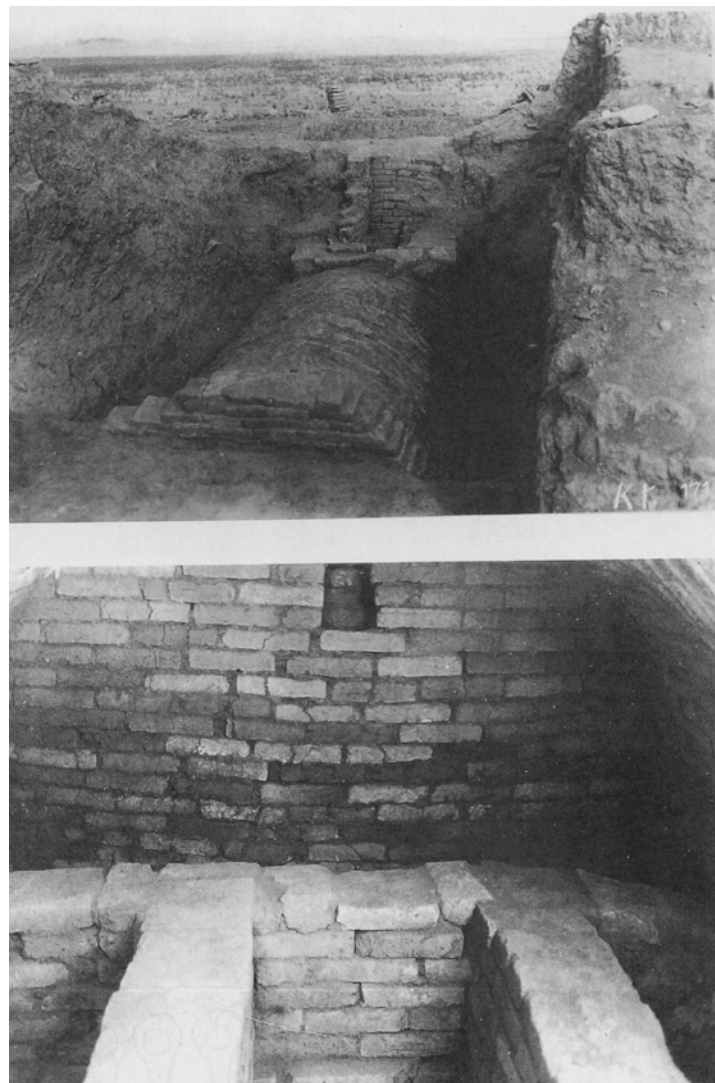


Figure 11.14 - Grab I - Coche/Veh Ardashir (Hauser 1993, Taf. 125)



Figure 11.15 - Underground chamber 131 – level II at Seleucia on the Tigris (Yeivin 1933, Pl. XVIII).

they were placed on the benches, possibly wrapped in a shroud or inside coffins (in clay or wood?), which have not left any archaeological record, except perhaps for a few nails.⁵⁶

All the discovered tombs were plundered; some of them were also pillaged in ancient times and later restored, as in the case of T23, where a flat slab was used to close the door instead of the original monolithic door,⁵⁷ or T28 where the door was sealed with baked bricks. The bone fragments found are less than residual, except for those recovered in T20; the discovered residual grave goods were found mainly in secondary depositions. Given the high number of human bones identified in T20 (smaller than other family tombs), it is possible to suggest that this structure became an ossuary at a later point in time, perhaps collecting bones.

Coffin fragments in clay were not found in the excavated tombs. Hence, it may be suggested that their use was uncommon at the site, unlike what happened in other centres of Elymais, such as Gelalak (Fig. 11.11), and Susa - Ville des Artisans (Fig. 11.13), or in many Mesopotamian tombs, like that of Seleucia on the Tigris and Coche/Veh Ardashir and Ashur, where coffins were set in loculi defined by baked bricks walls (Figs 11.14-16).⁵⁸

Given the diffused context of inhumation documented at the site, Zoroastrian funerary practices made canonical in Sasanian times are not attested.⁵⁹ According to Boucharlat, no archaeological sign is recognisable in Khuzestan for Zoroastrian burial practices, considering for instance that hundreds of burials and cylindrical jars for infants and babies were discovered at Susa.⁶⁰

⁵⁶ See chapter 9. Well preserved wooden coffins from the same period were discovered at the Shakoura necropolis in Bahrein (Andersen et al. 2004).

⁵⁷ The door features are discussed in depth in the following paragraphs.

⁵⁸ For the vaulted tombs at Seleucia on the Tigris see, Yeivin 1933; Negro Ponzi 1972, 25; Valtz 1988, 23; Messina 2006, 143, 170-173. For the vaulted underground tombs at Coche/Veh Ardashir excavated by the German Expedition, see Hauser 1993, 335-336. For Ashur and underground chambers, see Andrae, Lenzen 1933, 97-99.

⁵⁹ Potts 2006, 270-272; Boucharlat 1999, 86.

⁶⁰ Boucharlat 1999, 86; Farjamiad 2015, 17.

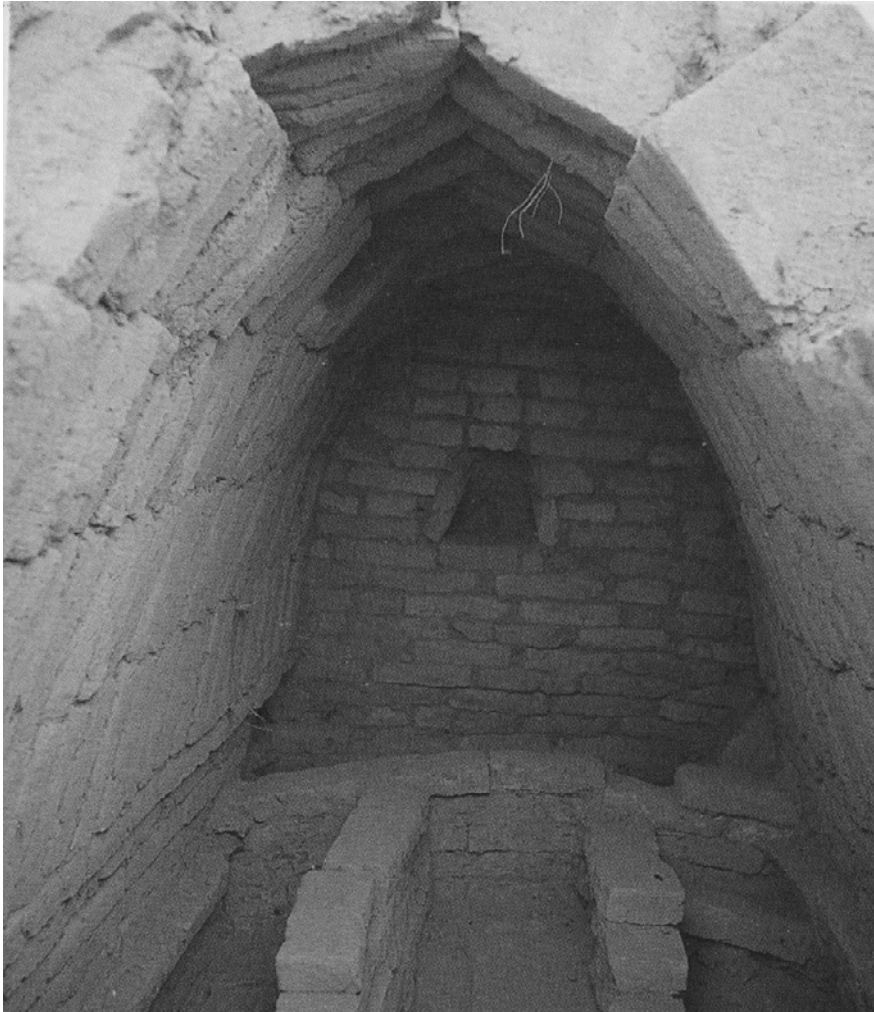


Figure 11.16 - Underground tomb from the so called 'South Square', Seleucia on the Tigris (Messina 2007, 145, Figure 5)

Given the archaeological data so far recorded from the excavated tombs, the incineration is not attested at the site.⁶¹ Only the excavation of an untouched tomb would furnish new information to better understand the mortuary practices at Kal-e Chendar and whether Hellenistic, Iranian or Mesopotamian influences on the burial and successive ritual practices are recognisable.

Only on the rear wall of T23 (40 x 30 x 30 cm) and T28 (60 x 37 x 26 cm) niches can be seen, while two ledges were set on the back of T25 and an opening on the top of the rear wall of T26 (Fig. 11.17). The niches are opened in the upper part of the wall and probably originally contained a small pottery jug or a jar, as in other underground chamber tombs from the Parthian period, for instance at Gelalak⁶² (Fig. 11.18), Seleucia on the Tigris⁶³ (Figs 11.15-16) and Coche/Veh Ardashir (Fig. 11.14). It is interesting to note that this niche is totally absent in the chamber tombs of the Ville des Artisans at Susa, probably showing a different disposition and setting of the tomb and perhaps different funerary practices. No lamps or fragments of lamps were recovered at Kal-e Chendar, which were set sometimes in the back niches or ritually collected in Mesopotamian and Iranian funerary chambers from the Hellenistic and Parthian periods.⁶⁴ The ledges discovered in T25 most likely have the same function as niches, perhaps for holding part of the grave goods and pots.

⁶¹ Incineration, a common practice during the Hellenistic period, for the Zoroastrian religions was considered an abomination (Boucharlat 1999, 86). Incinerations are attested in a few cases in the necropolis of Dura Europos and are contained in jars (Toll 1946, 5-6).

⁶² Rahbar 1999, 92-93.

⁶³ Yeivin 1933, 49, 50, fig. 8.

⁶⁴ Lamps were discovered in the rear niche, for instance inside tomb n. 131 (block G6) at Seleucia on the Tigris (Yeivin 1933, 51). Oil lamps were placed in niches in room 107 in a troglodytic handmade underground architectural complex at Samen (Malayer) from the Parthian period (Azandaryani et al. 2016, 2).

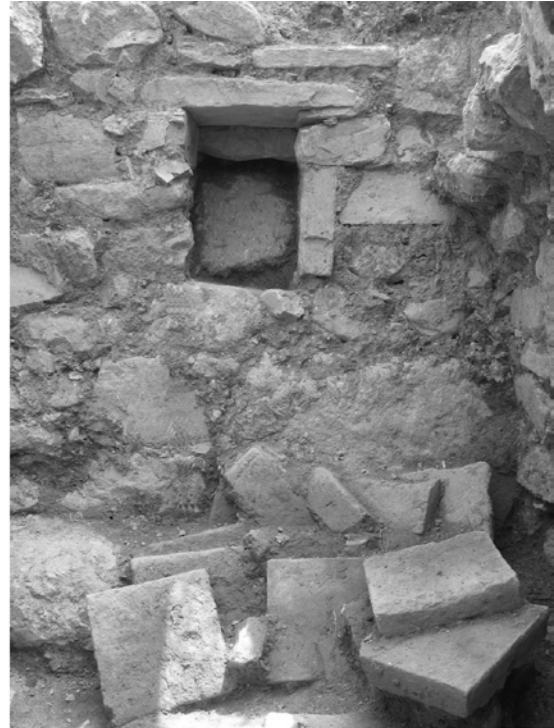


Figure 11.17 - Niches on the back walls of T23 and T26; shelves on the back wall of T25 and loop-hole of T26

A squared stone, identified as a base, laid against the rear wall of T25, may indicate that burial or periodical rites were practiced inside the chamber, even if no traces of ashes and burning were discovered on its surface. A small altar in bricks covered with plaster was discovered in a chamber tomb of Susa (Vaulted Tomb 5) attesting a widespread funerary custom.⁶⁵

The tombs are usually arranged with a simple earthen floor, even if in two cases located in the western and upper part of the site, slabs are carefully placed on it (T9, T20).

⁶⁵ Boucharlat, Haerinck 2011, 63, pls 26, 30.

Figure 11.18 - Niche on the back wall of Tomb 1 (Gelalak) with a small glazed jug inside (Rahbar 1999, 93)

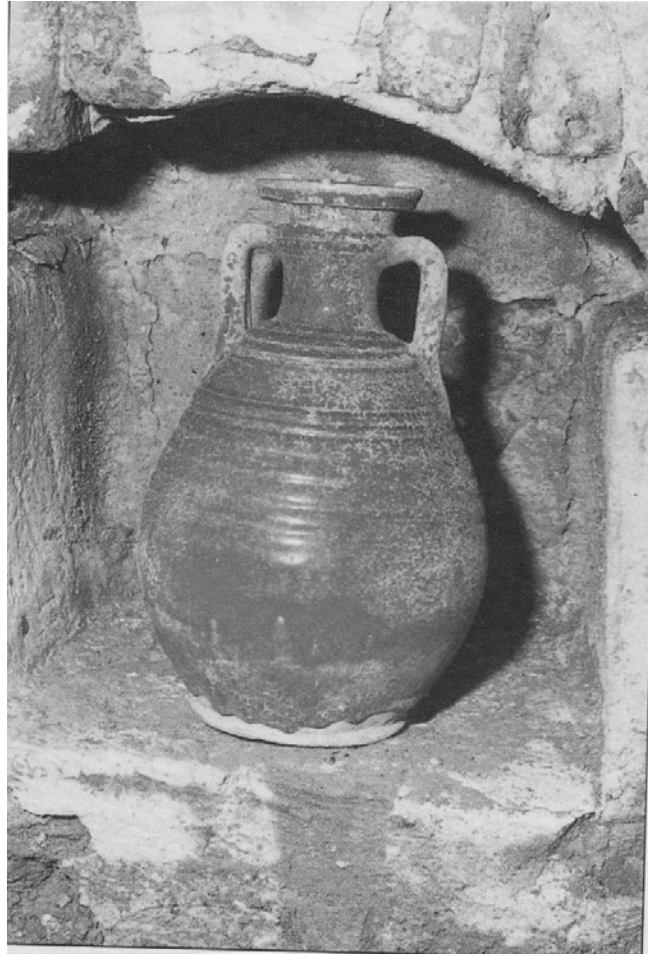


Figure 11.19 - Monumental stone door of T24



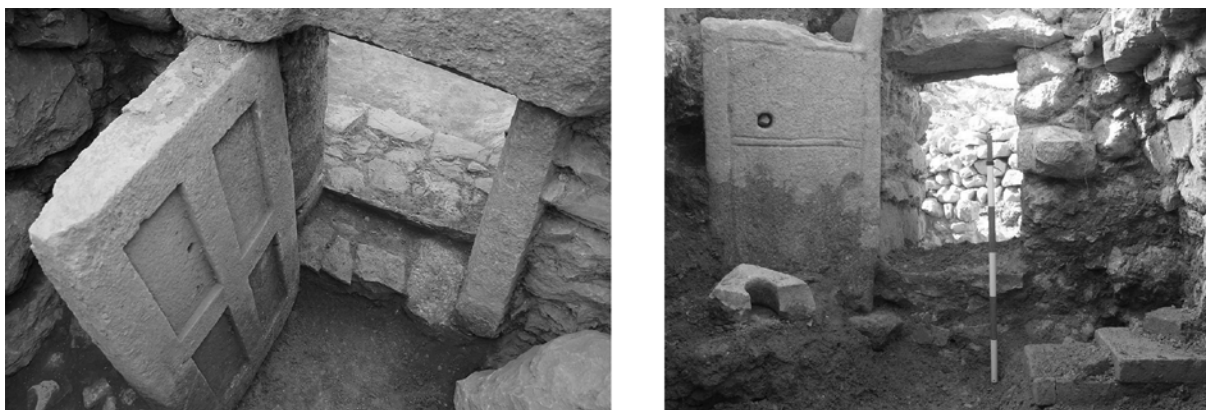


Figure 11.20 - Stone carved doors of T26 and T28 in situ

Monumental stone carved doors have been found in only three tombs (T24, T26, T28), but they were probably commonly used at the site to seal all funerary chambers (Figs 11.19-11.20). The samples found are single swing doors. When missing, they have been arguably destroyed by later looters or re-used (broken) as building materials by local villagers, or in the stone walls scattered in the fields of the site. These doors, openable inward, were blocked in their position with two pivot-stones, preserved in some cases. Doors T24 and T26 are carved with a 'wooden false door' decoration on the outer face, made with four simple low-carved protruding frames, representing in origin metallic bracket. The door found in T28 shows a simple decoration with two engraved lines defining two frames. For this latter door, the locking system is better preserved and complex. It was probably composed of a wooden or metallic latch placed on the inner side of the door, which would be locked with a sort of key from outside. When locked, the latch fitted precisely in a holed drilled in the eastern part of the jamb, where a protruding stone is placed (Fig. 11.21).

The model of this type of door is already known from the Hellenistic period, when double swing doors, usually in marble, with the representation of false metallic brackets and studs were discovered to close different monumental tombs, for instance at the cemeteries of Vergina and Miéza.⁶⁶ False doors with elaborate mouldings, probably originally representing complex wooden models, were recovered in later necropoleis of Roman and Parthian periods showing a development of doors for underground chambers or tower-tomb buildings at Palmyra,⁶⁷ in Syria, especially in the Hawran region,⁶⁸ and at Hatra (Fig. 11.22). Sturdy tombs with heavy stone doors, sometimes with locks, kept the bones safe and gave a general idea of protection of the dead – as in other funerary contexts of the Parthian and Roman periods.⁶⁹

Given their dimensions and the comparisons proposed, it may be assumed that all the funerary chambers discovered at Kal-e Chendar, even the smaller ones, were family tombs, even if some of them could have become ossuary overtimes. Family tombs were probably reopened repeatedly, over the decades, for the deposition of bodies of the same family group. The residual grave goods recovered inside them indicates that a rich aristocracy was buried in this particular sacred landscape located in the mountains. In these tombs precious grave goods were recovered such as several fragments of gold foils, probably related to diadems and mouth coverings (T23 and T28), a bronze mirror fragment (T23), semi-precious stone beads and metal beads (T23, T26, T27, T28), a bronze pins of Hellenistic origin or influence, cast with a divine couple on the top (T7).

The vessels discovered inside T23 represent the most complete assemblage discovered at the site, even though some were broken, and some specimens were probably missing because of pillages carried out

⁶⁶ See for instance the tomb excavated by Rameos (Andronicos 1989, 31, 33 fig. 11); the so-called 'Tomb of Philip' (Andronicos 1989, 76, 101); the Tomb of the Prince (Andronicos 1989, 198-199). For the development of tombs during the Hellenistic period in Macedonia (D'angelo 2010, Morizot 2011, Rhomiopoulou 2011).

⁶⁷ See for instance the seal of the Hypogeum of Iarhai: Amy, Seyrig 1936, 231-232, de Jong 2017, 289.

⁶⁸ For instance, Tomb no. 8 of the necropolis of Tel Aswad, l Bosra (Sartre-Fauriat 2001, 39, fig. 41).

⁶⁹ de Jong 2017, 150.



Figure 11.21 - Eastern jamb with a protruding stone with a hole

in ancient times. They offer a good idea of the variety of shapes composing the original funerary set. Inside the tomb almost eight complete glazed bowls,⁷⁰ glazed and red slip small vases and amphoriskoi, which may have been used to contain perfumes or other fatty substances, big jars, jugs, and a strange ovoid pilgrim flask were discovered. Given that pots have a primary drinking or consumption function, they could be related to the funerary meal, a popular custom in necropoleis and burials from the Parthian period, or to the deposition of foods and libation to the dead;⁷¹ while the choice to insert a pilgrim flask in a funerary set could be related to the journey of the dead into the Underworld.

The presence of glazed pottery, dated mainly to the 2nd century BCE – 1st century CE, together with Red Slip Ware specimens, probably of a more ancient date, support the idea of a long period of use, with constant reburial inside the main chamber of T23, in line with the interpretation of Kal-e Chendar's tombs as family funerary chambers (Fig. 11.23).

If we consider the high number of tombs, their variety and complexity and also the lack of a settlement close to the sanctuary of Kal-e Chendar, it is possible to suggest that the cemetery was the burial place for important members of families, who might have lived in the region possibly centers like Mal-e Mir (Izeh), the most important city of the area during the Hellenistic and Parthian periods,⁷² and at Piyun, the village close to the valley where another similar cemetery was located.

Only three cist graves were discovered at the site, one is delimited with stone slabs and two are made in baked bricks (Fig. 11.24). The top was sealed with two bricks in the latter cases. This particular type of tomb was used exclusively for children, revealing a particular funerary custom for this age group at the site. This local practice seems different, for instance, from the one encountered at Susa, where children were usually buried in cylindrical jars in a devoted cemetery during the Seleucid and Parthian period.⁷³ Saddle-roof and flat box graves in baked bricks are common in Iran⁷⁴ and Mesopotamia⁷⁵ and sometimes are employed for children, as is the case of a Parthian tomb discovered at Coche/Veh Ardashir.⁷⁶ Four baked bricks, two on each side, defined the roof, while two other bricks (Fig. 11.25) closed the triangular openings at each end. The use of cist graves for sub-adults is also attested in Hellenistic cemeteries in Greece, even if for younger children (younger than three years of age) and infants the deposition in vases prevails there as well.⁷⁷

⁷⁰ Chapter 7, nos 5-9, 11-12.

⁷¹ See Boucharlat, Haerinck 2011, 35, 67.

⁷² See chapter 5.

⁷³ Boucharlat, Haerinck 2011, 39-41; Farjamirad 2015, 17.

⁷⁴ Farjamirad 2015, 11-12; 15-16.

⁷⁵ For the Achaemenid and Seleucid tombs at Tell ed-Dēr, Abū Qūbur and Mahmūdiyyah see: Gasche 1996. For this type of tomb at Seleucia on the Tigris see: Yeivin 1933, 45, 48; Messina 2006, 141. Only one disturbed tomb in the area of the Archive at Seleucia shows a flat top (Messina 2006, 141, Type B2), while 7 tombs with this covering were recovered in block G6 (Pestle 1999, 35, fig. 15). At Uruk one tomb shows similar architectural features see: Pedde 1995, 161, no. 573, tav. 225.

⁷⁶ Cavallero 1967, 53.

⁷⁷ Dimakis 2019, 291.



Figure 11.22 - Carved stone door from a tower tomb of Palmyra – Palmyra Museum and carved door from a funerary building from Hatra (Archive of the Italian Expedition at Hatra)



Figure 11.23 - Pottery assemblage from T23

11.5 Earlier Models and Architectural Comparisons (Fig. 11.29)

The building technique employed for the Kal-e Chendar's tombs, with roughly undressed blocks and slabs for the roof, arranged without mortar, is a traditional/local constructive feature, shared with more ancient funerary structures (3rd-1st millennium BCE) detected in the Zagros mountains, mainly in the Khuzestan region.



Figure 11.24 - Graves 1-3 discovered at Shami: a) Gr1 (stone walled grave); b) Gr2 (box in backed bricks); c-d) Gr3 (box in backed bricks)

The cemetery of Lama in the Beshar valley (province of Kuhgiloye va Boyer Ahmad), is a good example in this sense (Fig. 11.26).⁷⁸ Seventy-three tombs, characterised by irregular stone blocks set for walls and flat or saddle-roof coverings, were discovered there during Iranian archaeological rescue expeditions. Single and family depositions were found inside them, while slabs of the roof were removed to allow the deposition of new corpses.⁷⁹ Another earlier example of a similar constructive technique is a tomb excavated at Gilviran (Khorrambad, Luristan) by Herzfeld and checked recently by Haerinck and Overlaet. The tomb dimensions (5.20 x 1-50-1.80 m) are similar to the Kal-e Chendar's structures⁸⁰ (Fig. 11.27), even if the tomb was accessed from the rooftop just as it was in the cases of Lama's tombs.

The well-known Neo-Elamite tombs of Arjan, located near Behbahan (Khuzestan), is conversely completely different in building technique in comparison with the Kal-e Chendar tombs for the use of regular stone blocks for the walls and flat slabs melted with bitumen for the covering.⁸¹

At the moment, the underground tomb discovered at Cheram (Kuhgiloye va Boyer Ahmad province) is the best chronological and building comparison for the tombs of Kal-e Chendar. The underground chamber, identified under a modern house, was entirely built of undressed stones with a flat roof made of monolithic flat slabs (Fig. 11.28). The dimensions of the tomb (3.80 x 1.30 m) are similar to the chamber tombs identified at Kal-e Chendar,⁸² while the entrance (80 x 80 cm) was opened toward the east and is sealed with a monolithic stone slab. The outside face of the door was not cleared by the Iranian team and was possibly decorated originally with a false door, as at Kal-e Chendar. An almost complete set of funerary goods with several complete pots from the Parthian period were discovered

⁷⁸ Soltysiak 2013, 77-78.

⁷⁹ Soltysiak 2013, 78.

⁸⁰ Haerinck, Overlaet 2013, 43.

⁸¹ Alizadeh 1985, 49; Álvarez-Mon 2010, 24-26.

⁸² Roustaiei, Azadi 2011, 196.

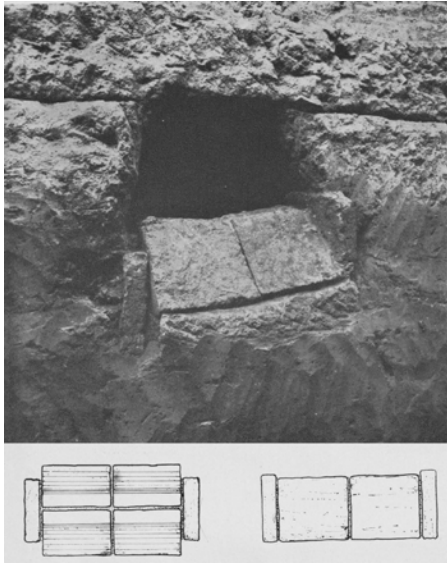


Figure 11.25 - Parthian tomb in backed bricks (Cavallero 1967, figs. 30, 32)



Figure 11.26 - General photograph of the Necropolis of Lama (Beshavar valley) (Soltysiak 2013, 94, Figure 1b)



Figure 11.27 - Gilviran tomb (Khorrambad - Luristan) (Haerinck, Overlaet 2013, 43)



Figure 11.28 - Tomb of Cheram (Kuhgiloye va Boyer Ahmad) (Roustaei, Azadi 2011, 204, Pl. II)

in the filling layer.⁸³ Tombs built of undressed stones with monolithic slabs used for the roof were also recently discovered by Iranian surveys from 2006-2012 in the area of Majid-e Sulayman and Bard-e Neshandeh. Four chamber tombs (1.8 m wide, 4 m long, c. 1 m high) were identified at Qal'eh Shias (Gotvand).⁸⁴ Nine funerary chambers of the same type were discovered at Konar-e Hashtlik (Gotvand dam area), while at Kafe Babak (not far from Bard-e Neshandeh) two tombs of this type were recognised on a hill nearby and two ruined structures (perhaps the scanty remains of tombs) are located near the terrace of Bard-e Neshandeh.⁸⁵

Other good comparisons for dimensions and layout can be proposed with many of the underground or semi-underground funerary chambers built in baked bricks, already mentioned referring to

⁸³ Roustaei, Azadi 2011, 197-199.

⁸⁴ Sardari Zarchi et al. 2014, 71-72.

⁸⁵ Sardari Zarchi et al. 2014, 72. The ruins of similar structures, recognisable for the slabs on the terrain, were also identified at Chesmeh Chelvar (KS-2187).

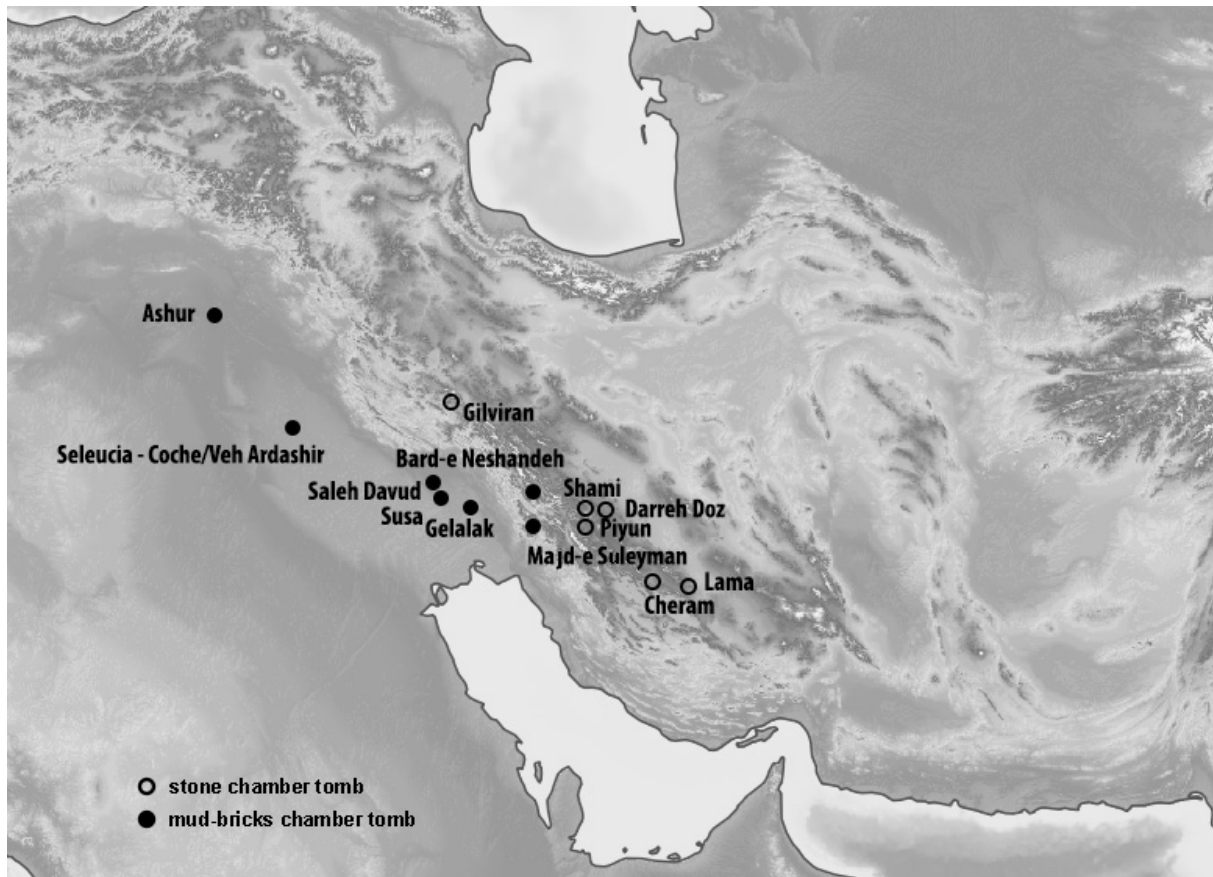


Figure 11.29 - Location of the main comparisons with Kal-e Chendar tombs (elaborated by the author)

architectural elements: Majid-e Sulayman,⁸⁶ Gelalak (Shustar)⁸⁷ and Susa⁸⁸ in Elymais, Seleucia on the Tigris,⁸⁹ Coche/Veh Ardashir,⁹⁰ Babylon,⁹¹ Kish,⁹² Tell Aswad⁹³ and Ashur⁹⁴ in Mesopotamia. In some cases, the comparison also regards the presence of niches and secondary chambers along the stairway, as in some cases discovered at the Ville des Artisans at Susa.

The model of underground chambers with a stairway could be related in origin to examples of the Hellenistic period, when funerary buildings of this type were discovered not only in Macedonia,⁹⁵ but also in Cyprus and in many areas under the Hellenistic influence.⁹⁶ The chamber tombs with corridor discovered in Mesopotamia and lowland Elymais, built in baked bricks, and the Kal-e Chendar's tombs, constructed in stone, belong to the long-lasting development of this tradition, which evolved up to the late Parthian age with complex plans, embodying secondary niches and chambers along the stepped corridor. This tradition was rather common along the eastern Mediterranean coast and in the Middle

⁸⁶ KS-2059, Sardari Zarchi et al. 2014, 71.

⁸⁷ Rahbar 2007, 1999.

⁸⁸ Boucharlat, Haerinck 2011.

⁸⁹ Messina 2006; Pestle 1999; Yaivin 1933.

⁹⁰ Hauser 1993.

⁹¹ U'mran Musah 1979, 67-68. For the 'Caveau Delaporte': Invernizzi 2008, 255.

⁹² Watelin, Langdon 1934, 54-55.

⁹³ al-Zeebari 1982; Abdallah, al-Fityan 1972.

⁹⁴ Andrae, Lenzen 1933, 97-99.

⁹⁵ D'angelo 2010.

⁹⁶ McFadden 1946. XX

East, as indicated, for instance, by the chamber tombs, articulated catacombs and cairns discovered in Syria,⁹⁷ Iraq,⁹⁸ in the area of the Persian Gulf⁹⁹ and Iran.¹⁰⁰

Mound chambers from the Hellenistic and Parthian periods are also partially good comparisons for the Kal-e Chendar tombs, even if the tombs of Kal-e Chendar were probably not covered with high mounds above the roof. The tombs of Umm Jidr (Bahrein) are composed of single chambers¹⁰¹ made with undressed stone masonry, while the roof was made with capstones,¹⁰² similar in shape to those employed in the tombs of Kal-e Chendar.

For the distribution of tombs inside the cemetery, it is difficult to propose good comparisons with centres from Hellenistic and Parthian periods of the Near and Middle East for the peculiarity of the cemetery of Kal-e Chendar, composed mainly of chamber tombs, and for the lack of wide excavations of necropoleis from the same period. Only new research and excavations in other cemeteries and at the site will furnish new data for the comprehension of this space devoted to the dead, located close to or into the sanctuary of Kal-e Chendar.

⁹⁷ See, for instance, the most simple catacombs of Dura Europos cut out in the calcareous layer: Toll 1949, 7-9, or the cairns discovered along the Euphrates at 'Ain al-Hajal, Abu Jelal, Shak al-Hamman, between Rumeileh and Salenkahiyeh and in the Hawran, Beqa and Hermel regions and on the plain of Si' see: Sartre-Fauriat 2001, 435-436.

⁹⁸ For the cairns of Uruk see: Pedde 1995, 140-152. For the chamber tombs in Mesopotamia see above in the notes.

⁹⁹ al-Sindi, Ibrahim 1999; Andersen 2009; al-Saud 2010, 399-401.

¹⁰⁰ Farjamirad 2015, 20-23.

¹⁰¹ The dimensions of the chambers are respectively, see mound 1b - 1.30 x 0.70 m; mound 1 a - 1.35 x 0.60 m; mound 1c - 1.60 x 0.65 m, mound 2 - 1.70 x 0.70 m; mound 3 - 2 x 0.70; mound 4 - 1.30 x 0.60 m (Cleuziou et al. 1981, 22-27).

¹⁰² Cleuziou et al. 1981, 22-27.

Chapter 12

Conclusion

Jafar Mehr Kian, Vito Messina

The research conducted by our joint expedition in the Shami valley at Kal-e Chendar is the only systematic study of the site since the accidental discovery of statues, statues' fragments and plinths in 1935, and the preliminary excavation carried out by Stein and Karimi in 1936 (see chapter 1). Due to the ground morphology, archaeological stratigraphy and other circumstances (see chapter 6.1 and 6.2) our field strategy was inhibited from extensive excavations and from intensive survey; in addition, archaeological records were recovered in contexts not always clear. Many questions remain thus unanswered, but information acquired is enough to put forward hypotheses on the main features and meaning of the site.

Basing on the preliminary results of previous investigations and on the outcomes of our research, one can say that an important complex of religious type existed at Kal-e Chendar in the Hellenistic and Parthian periods, from about the 3rd century BCE to the 2nd century CE. A more precise chronology within this time span is hard to define. No evidence was found of the existence of a complex pre-dating the Hellenistic period, but it cannot be ruled out that the site was known, and in some way frequented, even before: the long-term use of places for religious purposes is well-attested in Elymais and the occurrence, especially on surface, of lithic objects in some of the surveyed areas testifies to the human frequentation of the site since prehistoric times. Our research shows that such a complex was multifunctional. Indeed, the religious meaning –a meaning of utter importance– was not the only characteristic of the site: monumental terraces, built to support sacred buildings now lost, alternate with a wide cemetery, thus implying that the religious and funerary functions were here strictly interrelated. The complex had probably also social meaning, as we will see.

The archaeological area so far recognized overlaps a colluvial debris fan extending for about 50 ha, delimited by two streams and a river: the Rud-e Shami. This is only one –the biggest– of the fans that mark the slopes of the Shami valley. These fans originated in prehistoric times, due to the collapse of lithic materials from the mountain peaks that surround the valley itself, following a typical anticline movement (see chapters 2 and 3). The terraces and cemetery there found were thus placed on a sloping surface quite uneasy to be used for building purposes.

All the terraces recognized by our survey revealed traces of building foundations on their top surface. When considering the results of our excavations (see chapter 6), it can be postulated that at least the Upper Terrace, Terrace 3 and the North Terrace supported buildings or structures used for cultic purposes. It would not be surprising, however, if further research will reveal that similar structures were built on Terrace 2 and Terrace 4. The Upper Terrace, extending for about 8,000 m², is clearly the prominent cult place of the site, given the dedication of statues and statuettes in that point. The terrace once supported at least one religious building, made of stone and baked bricks, of uncertain extension, but hardly encumbering an area larger than the terrace's center; the terrace also supported other structures in baked bricks that can be interpreted as small platforms or altars.¹ Terrace 2 is still unexplored, but it appears to have been arguably related with the Upper Terrace, as if the two were built as a pair. Terrace 3 supported baked brick buildings of which very little can be said. Terrace 4, the furthest monumental structure built at the site toward the Rud-e Shami, and extending for about 5,200 m², supported a small structure, probably not exceeding 50 m². The North Terrace, the westernmost structure in a series of three subsequent terraces, as far as one can see, was built to support mainly

¹ The brickwork identified by Stein and Karimi as a ruined base or the remnant of a floor is probably what remains of a stepped platform (or altar) east-west oriented (see chapter 6.3).

funerary and ritual monuments (Platforms 1-3). A further platform, west of the former, is still to be excavated. Such a terrace, probably extending for 4,000 m², was one of the focus points of the cemetery, because a cluster of tombs seems to have been purposely placed around it. The platforms identified on its top encumber an area of about 200 m².

Along with the buildings once standing on the terraces, different types of structures, understandable as places for cultic purposes quite confidently, are witnessed for the period in which the sanctuary was in use. The best example that can be found is the baked brick small structure unearthed in our Trench 3, an altar (or platform to support an altar) to which a worshipper could have been led by a low stair. Such a platform was built with two brick formats, and it is worthy of note that it does not find comparanda at other excavated terraced sanctuaries of the region: it remains speculative if this is related to a rituality peculiar to the Kal-e Chendar complex, but the occurrence of baked brick altars in Seleucid and Parthian Mesopotamia could be indicative of some influence from that environment.

The latter structures appear to have been scattered in different points of the cemeterial area, along with funerary monuments, which could have had a celebrative function, and with semi-underground tombs, characterized by well visible monumental façades, time by time accessible to users and visitors. The cemetery was not only a place to entomb the deceased: it was frequented also to perform funerary rituals in front of the tombs' façades or on the platforms there built. This is witnessed by the presence of betyls or stands and censers close to the platforms or in funerary chambers, and by the finding of the remains of sacrificed animals close to the tombs' façades.² Tombs, which can reveal in their layout the presence of a main funerary chamber and of niches or small chambers for animal sacrifices could contain many inhumations and embody, sometimes, also small graves for children. Their monumental façades could be used to limit open yards or small courts accessible by paths and/or stairways.

There is no evidence to establish the relative chronology of the sacred buildings erected on the terraces and of the first tombs excavated in the area. However, if one takes into consideration some pottery types and small findings put into tombs as funerary objects, which can be dated from the 3rd century BCE basing on comparisons (see chapters 7.7 and 9.1), it may be suggested that the sacred buildings and the cemetery, if not exactly contemporaneous, belong to the same period. This is very interesting as it may show that the religious and funerary function coexisted almost since the beginnings in such a complex.

The buildings and structures of the complex were probably demolished soon after the Parthian age, and the cemetery was repeatedly plundered after the abandonment of the site. The heavy destruction of religious buildings is indeed corroborated by the finding of smashed statues, which were originally dedicated on the Upper Terrace. It may not be excluded, although it seems improbable basing on known evidence, that statues were dedicated also in other points of the site. Traces of sporadic reoccupation of some areas of the site, mostly corresponding to the cemetery, appear to be related to the periods following the first abandonment: squatting occupations, almost impossible to date precisely due to the lack of materials, show that some of the ancient tombs could have been reused as storage places in domestic contexts, characterized by precarious architectures and large open spaces probably used to keep animals (see chapter 6.6.1). This type of reuse probably explains, at least in part, the almost total lack of human remains in the surveyed and excavated tombs. The latter could have been made repeatedly empty of human bones over the time to perform funerary practices, which allowed users to find space available for new inhumations, until the more recent buried human remains were displaced from the tombs to reuse their funerary chambers: in such a case, future excavations will arguably allow archaeologists to find ossuaries or bones' assemblages in still unexplored areas of the site.

The general setting of the Kal-e Chendar complex, except for the cemeterial area, finds comparison with trends locally developed, attested in the other known terraced sanctuaries of the region:

² Animal bones have been found in niches placed in the stepped corridor giving access to the funerary chamber of tomb T23, for instance (see chapter 6.5.2).

Majid-e Sulayman, Bard-e Neshandeh and Qal'e-ye Bardi.³ Such a setting is based on the presence of monumental terraces overlooking a streambed and often guarded by small fortresses or defensive outposts (see chapter 2). The terraces offered extended surfaces, largely unbuilt: the edifices they once supported are largely undersized if compared to their extension.⁴ This leads one to suppose that terraces were used to gather a lot of people in outdoor spaces during specific ceremonies or occasions, and that these gatherings could have facilitated the social interaction of the many communities sparsely living in the mountains or coming from the major sites situated in intermountain valleys, according to a model defined by the middle ground theory.⁵ The terraces at Majid-e Sulayman and Bard-e Neshandeh show a configuration comparable to the Upper Terrace of Kal-e Chendar: in the two former sanctuaries the dedication of sculpted stone slabs or statues almost in the round of full Parthian date parallel the dedication of bronze and stone statues and statuettes at Kal-e Chendar. Thus, the Upper Terrace of Kal-e Chendar shares with two of the other known terraces a series of characteristics: a general conformation that implies low-built spaces, a series of findings related to dedicational ambits, and the presence of cult installations. It also shows similarities with the terraced sanctuaries at Bard-e Neshandeh and Qal'e-ye Bardi for its topographical setting, as it overlooks a streambed and is guarded by fortresses built on hillocks. The concomitance of all these elements further corroborates the pre-eminence of the Upper Terrace in the context of the site.⁶

As far as one can see, the architecture of Kal-e Chendar is balanced between the need to integrate low-built environments in the natural landscape of the Shami valley and the propension to a monumentality influenced by global trends. The first need is proven by the comparison between the sacred terraces recognized at the site and other terraced sanctuaries of the same region, the latter propension is revealed by the similarity some of the structures unearthed in the cemetery show with funerary contexts of Mesopotamia, Syria and the Levant.

The terraced sanctuaries so far recognized in highland Elymais appear to have been built to be effectively integrated into their natural mountainous landscape. The terraces discovered at Kal-e Chendar conform to this trend completely. These monumental structures have been adapted to the conformation of the ground and laid at the feet of low crests and hillocks, or on colluvial fans, to make terrain ridges and slopes more regular and flatter. They perfectly witness the adaptation of architecture to landform. This is clearly perceivable when the sites of terraced sanctuaries are surveyed, but it appears evident also thanks to the examination of aerial imagery.⁷ Terraced sanctuaries and mountains appear thus physically linked. The complex of Kal-e Chendar is meaningless if one does not understand it as a part of the mountainous environment in which it was built. Such an understanding arguably implies that the mountain conceptually played an important role in the building of these monuments, and the last assumption seems corroborated by epigraphic evidence referring to religious practices diffused in highland Iran in antiquity (see below).

³ For Majid-e Sulayman and Bard-e Neshandeh see Ghirshman 1976, for Qal'e-ye Bardi see Messina 2018 and related bibliography. See also Messina, Mehr Kian 2018 for comparisons between the known terraced sanctuaries and Salaris 2023 for an updated review of Bard-e Neshandeh.

⁴ The data available lead one to suppose that the buildings erected on the sacred terraces were of relatively small size, with a simple layout. A disproportion between built and unbuilt spaces can be observed also on other sacred terraces of Elymais, such as Majid-e Sulayman and Bard-e Neshandeh.

⁵ On this aspect, see Messina, forthcoming. For the middle ground theory see in particular White 1991.

⁶ It is extremely interesting to find reference to mountainous sanctuaries guarded by fortresses of Hellenistic-Parthian times in literary records, although of a far more recent date. This can be an indication of a trend that survived over time and was described retrospectively. This reference can be found in the so-called *Life of K'art'li*, a medieval Georgian source dealing with the introduction in the local milieu of Iranian deities, variously dated from the 9th to the 14th century CE (see Shenkar 2014, 20). It is said that sanctuaries guarded by fortresses were erected in the mountains by Azon, a mythical ruler of K'art'li contemporaneous of Alexander the Great: "Now Azon abandoned the religion given by Alexander, and he began to worship idols. He made two idols of silver, Gac'i and Gaim. After this Azon forgot the faith given by Alexander, and made two silver idols, Gac'im and Gayim by name, which he worshipped. And after him P'arnavaz became [king]. He erected a great idol on the ledge of a mountain, and he gave it his [own] name Armazi. And he raised a wall from the bank of the [? Mtkuari] river, and he called [this fortress] Armazi. And after him Saurmag became king. He erected the idol Aynina along a/the road. And he began to build up Armazi. And after him Mirvan reigned. And he erected the idol Danina along a/the road, in front [? of Aynina], and finished building Armazi. And P'arnajob reigned and erected the idol Zadeni on a mountain. And he built [the Zadeni fortress]."

⁷ See Ghirshman 1976, pls IV, V, LI, for Majid-e Sulayman and Bard-e Neshandeh; Messina, Mehr Kian 2014, fig. 6 for Kal-e Chendar; Messina 2018, figs 2 and 3 for Qal'e-ye Bardi.

The platforms built on the North Terrace are a good example of the influence of global trends on the monumental setting of the Kal-e Chendar cemetery. They clearly belonged to a ritual complex, as it can be deemed when their arrangement, disposition and features are taken into consideration. Given their location and archaeological context –surrounded as they are by clusters of tombs–, it is logical to define them as funerary monuments. For such a characteristic and for their architectural features (see chapter 6.5), they can be compared with platform-like structures or funerary markers found in different cemeteries or necropoleis of the Hellenising world, especially in Asia Minor, Syria and the Levant: these structures arguably derive from more ancient prototypes dating to Satrapal times, but comparanda can be also found in the Mediterranean. Even if the exact function of these overground substructures remains obscure, given their bad state of preservation, they can be understood as markers meant to make clearly distinguishable funerary environments.

The platforms on the North Terrace recall the layout, size and proportion of pedestal-like markers included in hybrid burial contexts of the above-mentioned regions, but there can be little doubts that they had not all the same function. At least one of them (Platform 1) appears to have been accessed to perform some funerary rituals. The others could have been commemorative monuments. The function of markers appears in the end the most probable feature among the hypotheses we have considered, even at a conceptual level, as if our platforms were cenotaph-like monuments rather than tombs themselves. Be that as it may, the platforms on the North Terrace reveal a clear propensity to monumentality. They stand on the highest point of the area in which they are placed, to be visible from afar, and to overlook the tombs clustered in the nearby, putting the cemetery of Kal-e Chendar in a global dimension, which rivals other funerary contexts even in far distant places. In such a global dimension the monumental and celebrative attitude of the cemetery at Kal-e Chendar perfectly matches with the prestige attached to the cult buildings once standing on the Upper Terrace. It is evident that such platforms are reminiscent of widely diffused global trends, which were adapted to be embedded in the local milieu.

The international ambition of the people once frequenting the sanctuary and the cemetery is likewise witnessed by what remains of the funerary goods discovered in the tombs (often residual of assemblages heavily looted). The pottery from Kal-e Chendar (see chapter 7.7) doesn't seem to find close comparison with types usually attested in highland Elymais. It is remarkable that there are almost no similarities with types and forms found in the Izeh plain (with few exceptions), and only few similarities with the pottery found at Bard-e Neshandeh and Majid-e Sulayman; some parallels can be seen, instead, with forms found in the Ram Hormuz plain, in Fars and in the Zagros region. Two different pottery traditions can be detected in the Kal-e Chendar repertoire: a local tradition, influenced by late Iron Age and Achaemenid productions, and a supra-regional tradition (especially of glazed ware), probably spread in highland Elymais via Mesopotamia and the plain of Susa.

Along with the perpetuation of models in the Arsacid period (at least until the end of the 1st century BCE), the findings of Kal-e Chendar show that types derived from Achaemenid antecedents coexisted with a new repertoire, rather inspired by models widely diffused from the Mediterranean to the Iranian Plateau since the Hellenistic period: it is not perchance that almost all the distinctive pottery shapes witnessing a global influence (especially Mediterranean) are attested in the funerary sets of Kal-e Chendar. In this view, the production of glazed pottery imitating global forms seems to have particularly satisfied the demand of local people, as the introduction of Mediterranean types into local repertoires was counterbalanced by the continuity of regional patterns, visible in manufacturing techniques and surface treatments or decorations. Any hypothesis on the ethnicity of the people buried at Kal-e Chendar remains of course speculative, and the presence of objects of clear Mediterranean influence can be explained by the existence of a global taste among local people as well as by the possible presence of small groups arrived in these regions from the Mediterranean. More affordably, it can be observed that, like samples from other regions of the Arsacid domain and more generally of the Hellenising world, also the pottery of Kal-e Chendar shows forms of appropriation and adaptation combined with a production marked by a rooted tradition.

To a milieu strongly inspired by global models one can also refer other grave goods (see chapter 9), such as gold mouthpieces and pediment-shaped diadems decorated with floral and geometric designs, and a bronze pin with an embracing couple in Greek attire, seated on a lotus flower. The global ambition of the people frequenting the complex at Kal-e Chendar is so evident that one is inclined to relate the manufacturing of most of the funerary objects there found to great centers of production. This does not imply a priori that most of these goods were imports. One of the main sites of highland Elymais –the ancient city laying under present-day Izeh, about 30 km afar– can be a good candidate for this type of production, even during the reign of the Kamnaskirid dynasty: one may well think that in such a city at least part of the population was aware of –and attracted by– global standards and visual lexica in materiality.

There is no evidence to understand the cult(s) performed in the complex of Kal-e Chendar, as no dedicatory inscriptions have been found. The deity or deities there worshipped remain obscure. Epigraphic records attest that a cult of the mountains should have existed in Elam/Elymais far before the Hellenistic and Parthian periods.⁸ The occurrence of oronyms preceded by the divine determinative in lists of offerings in the Persepolis tablets, regularly scheduled and made, testifies that the mountains where the object, and not only the loci, of religious practices. Mountains appear thus to have been worshipped as gods along with other deities of different panthea. Of course, one cannot be certain that terraces, because of their mountainous environment and adaptation to landform, were purposely built for the cult of mountains, and this is also valid for Kal-e Chendar. As it is also attested elsewhere in the context of the Arsacid domain, it may be supposed that a plurality of cults could have been performed in such complexes, also including perchance a cult of the mountains. As a matter of fact, the physical link between terraced sanctuaries and mountainous land is well visible when the architectural features of terraces are considered (see above).

Be that as it may, the complex of Kal-e Chendar is peculiar, as it shows the interference between religious and funerary practices. This peculiarity is not evidenced by archaeological records known from other terraced sanctuaries of the region, as no cemeteries have been found during the excavations at Majid-e Sulayman and Bard-e Neshandeh or detected by the preliminary survey at Qal'e-ye Bardi.⁹ Unlike the other sanctuaries of highland Elymais, at Kal-e Chendar, funerary practices must have had some effects on the cult(s) there performed, one is inclined to think. The latter speculation seems corroborated by historical records, although these cannot be fully considered reliable, as they originated in a milieu far from Elymais itself.

Mountainous sanctuaries of Elymais are mentioned by Greek and Roman authors seldom but emphatically. A temple of Artemis (-Nanaia?), said to have been endangered by Antiochus IV, is mentioned by Polybius in the 2nd century BCE.¹⁰ A temple of Bel, at which Antiochus III met his death, is recalled by Strabo in the 1st century BCE, who also mentions a temple of Diana (i.e. Artemis) –the same mentioned by Polybius (?), likewise known as 'Azara' according to him.¹¹ The latter temple is even said to have been plundered by an Arsacid sovereign.¹² These and other occurrences dating to later

⁸ These date to the Achaemenid period, however, and their continuation in the religion of the people who lived in Elymais can be only postulated. See on this aspect Messina 2015, 202-203, and Messina, Mehr Kian 2018, 301-303, basing on the epigraphic records published by Henkelman 2008, 536-537.

⁹ One may rather see the sporadic presence of burials, but nothing comparable to a monumental cemetery extending for hectares such as at Kal-e Chendar (see Messina forthcoming). A cemetery very close to a terrace is attested on the Iranian Plateau only at Kangavar. There, a complex heavily quarried shows two monumental terraces and structures belonging to a columned building, alternatively and discordantly dated to the 2nd century CE or to the Sasanian Period. A Parthian (?) cemetery was recognized (and partly excavated) on the hillside east of the terraces. The function of the terraced complex is strongly debated. The clear evidence for a religious function is patently lacking. Suggestions have been made that the visible ruins could be what remains of a palace-like building constructed at the end of the Sasanian period, but this suggestion, like others, remains to be proved (see Kambakhsh Fard 1968, 1972; 1973; 1974; Azarnoush 1981).

¹⁰ *Plb.*, 31.9: "In Syria King Antiochus, wishing to provide himself with money, conducted an expedition against the sanctuary of Artemis in Elymais. When he reached the place, he was foiled in his hopes, as the barbarian tribes who dwelt in the neighborhood would not permit the outrage, and, on his retreat, he died at Tabae in Persia, smitten with madness, as some people say, owing to certain manifestations of divine displeasure when he was attempting this outrage on the above sanctuary".

¹¹ *Str.*, 16.1.18: "(...) When Antiochus the Great attempted to plunder the temple of Bel, the neighboring barbarians, unassisted, attacked and put him to death. In later times, the king of Parthia heard that the temples in their country contained great wealth, but knowing that the people would not submit, and admonished by the fate of Antiochus, he invaded their country with a large army; he took the temple of Minerva, and that of Diana, called Azara, and carried away treasure to the amount of 10,000 talents. (...)".

¹² This was Mithradates I after the conquest of Susa according to Nodelman 1960, 87, Hansman 1978, 154 and Harmatta 1981, 207. Other

periods point to the importance of sanctuaries and richness of their treasuries almost unanimously: intriguingly, they establish a link with Artemis/Diana almost always, with one indication also of Aphrodite (Nanaia).¹³ One deals of course with redundant quotations when referring to later sources, as these evidently repeat more ancient accounts that had become literary topoi. In such a frame, the link particularly established between Artemis and at least one of the temples of Elymais (probably also called Azara) by Polybius and Strabo deserves thus particular attention. Why is Artemis obstinately mentioned? Is it possible to relate such a mention to one of the terraced sanctuaries known so far?

The examination of the context of Mediterranean regions in the Hellenistic period, the milieu of the former authors, seems to explain the insistence on mentioning Artemis. Interestingly, what can be inferred basing on the known documents leads one to focus on funerary cult places. Archaeological and epigraphical evidence suggests that in the Mediterranean, but particularly in inland Greece, cult places and cemeterial areas coexisted in the same complexes. The overlap of religious and funerary function is often referred to as funerary sanctuaries by scholars in places such as Pherai and Demetrias, for instance, given the presence of graveyards and because of the chthonian nature of the deities there venerated. The so-called sanctuary of Pasikrata at Demetrias, situated in the city cemetery, is a good example of this type of suburban cult complexes in Thessaly.¹⁴ Basing on epigraphic evidence, in such a sanctuary the goddesses Pasikrata and Artemis En(n)odia were venerated. Pasikrata is an epiclesis that has been linked by archaeologists with Aphrodite because of the presence of figurines and marble female heads, depicting such a goddess, there dedicated along with figurines of Artemis.¹⁵

However, archaeological evidence and epigraphic records found in other dedicatory contexts seem to show that similar funerary cult complexes –which one may call Pasikrateia– also existed in other regions during the Hellenistic period, such as Epirus and Macedonia, where the presence of Aphrodite in funerary environments has led to consider the assimilation of her cult and that of Persephone probable.¹⁶ In Epirus, Pasikrata was either used as an epiclesis for Artemis.¹⁷ More recently these assimilations have been questioned, as it has been acquired by the study of materiality (particularly terracotta figurines) that the cult of Artemis, Aphrodite and Persephone can be multifarious, and that it demands to be understood in each specific context, although the chthonic funerary meaning is generally shared.¹⁸ Thus, the cult of chthonic Aphrodite and Artemis and related religious buildings could be linked with cemeterial areas. At Demetrias only Artemis seems to have had such a funerary meaning and given the use of Pasikrata as an epithet of Artemis in Epirus and Macedonia some scholars have emphasized that such an epiclesis could have been linked with Artemis primarily instead of Aphrodite.¹⁹ Be that as it may, it is evident that Artemis was worshipped in complexes also embodying cemeterial areas.

When looking at this framework, it seems arguable that the obstinate reference made by Greek and Roman authors to Artemis (and thus to Pasikrateia) was an attempt to contextualize, to the best of their capability, one of the terraced sanctuaries they had been made aware in Elymais, and an effort to describe it to their audience effectively (an audience with a Greek background primarily): such an attempt and effort appear thus related to their understanding of a place in which religious and funerary functions patently intersected. It is of course unwise to deduce that the terraced sanctuary they tried to describe was dedicated to Artemis actually, but it cannot be ruled out that people of Greek origin who visited the place or settled in the region could have worshipped Artemis in a sanctuary like

scholars, such as Nöldeke 1874, 192 and Potts 1999, 394-395 rather consider a later sovereign.

¹³ e.g. Josephus, in the 1st century CE (J., *AJ*, 12.354), Appian, in the 2nd century CE (App., *Syr*, 56), who rather refer to a temple of Venus/Aphrodite (thus Nanaia), and Porphyry of Tyre, in the second half of the 3rd CE (Porph. *Fr.Hist.* 53:11,56).

¹⁴ See for the first identification of such a sanctuary Arvanitopoulos 1912, 198-209; 1915, 162-164, 187-191. See for a recent reappraisal and a more thorough discussion Stamatopoulou 2014 (with related bibliography).

¹⁵ Many scholars have defined such a goddess as 'Aphrodite of the dead' (see above all Papachatzis 1958, 53-62), emphasizing the link without contradiction between a funerary and a kourotrophic cult at the same site. Others, while sharing this general view, have also suggested that Pasikrata could be understood even in the circle of great eastern mother goddesses, like Meter Theon and Atargatis (see for all Heinz 1998, 84-85).

¹⁶ Robert 1936, 134-135 (= OMS II, 1166-1191); SEG 37, 1526; SEG 49, 740.

¹⁷ See two votive monuments found at Ambrakia and Panagia Prevezas (e.g. Tzouvara-Souli 1979, 20-21).

¹⁸ See for instance Uhlenbrock 1988, 139-142, 150-156; Muller et al. 2004, 619-620; Chryssanthaki-Nagle 2006, 18-21.

¹⁹ García Ramón, Helly 2007, 287, 293-294; Stamatopoulou 2014, 217-218.

that. Whether one considers the last assumption shareable or not, there can be little doubts that the above references to Artemis in Greek and Roman sources must be related to Kal-e Chendar eminently, as this is the only place in Elymais where both religious and funerary functions are witnessed in the same complex by archaeological records. One cannot say that it was dedicated to Artemis, but the identification of the Kal-e Chendar complex with the sanctuary that Strabo calls Azara seems very probable.

In any case, the global attitude, international ambition and utter importance of the complex at Kal-e Chendar are confirmed by the dedications there witnessed. Whether or not one considers the identification of such a complex with the Azara mentioned by Strabo tenable, there can be little doubts that, among the known terraced sanctuaries, Kal-e Chendar is the best candidate for a reputation that far exceeded Elymais. The Upper Terrace is a good example of such a reputation, as the dedication of statues and statuettes in that point clearly attests. The bronze and marble fragments of sculptures there found probably belonged to a gallery of rulers and other personages, whose remains are residual of a much larger series of statues, spanning over centuries. This is also shown by the finding of statues' bases and plinths in a number higher than sculptures. It is worthy of mention that the known sculptural fragments allow one to deem the presence of statues of different size, ranging from samples larger than life size to statuettes: whether this implies a hierarchy of the portrayed persons or not, one is inclined to think that not all the portraits must be identified as rulers a priori. It would not be surprising that, along with ruler portraits (including local rulers), also portraits of notables or of high-rank people could have been present in such a gallery: as is well known thanks to the samples coming from Majid-e Sulayman and Bard-e Neshandeh, or to the sculptural repertoires of cities like Hatra, Euopos-Dura and Palmyra, notables or local sovereigns were dedicators of statues, especially in the 2nd century CE.

The statues and statuettes dedicated on the Upper Terrace of Kal-e Chendar had been deliberately smashed when the complex was destroyed and later abandoned, but the presence of pieces larger than life-size clearly points to a high reputed temple or sanctuary for such a dedication. No plinths bearing dedicatory epigraphs were found, and this is worthy of note when considering that epigraphs usually occur when statues had honorific meaning. However, it can be said confidently that some outstanding pieces surely portrayed prominent rulers: the most ancient one, a heroized ruler holding a spear, has been alternatively identified as a Seleucid or a Kamnaskirid dynast with no general consensus;²⁰ the so-called Parthian nobleman, probably cast at the turn of the Christian era, still remain debated, even if, basing on comparisons with numismatic iconography and on the historical background of the city of Susa, the identification of such a statue with the Arsacid king Phraates IV is being convincingly put forward.²¹ The fact that statues of rulers were there dedicated in a royal gallery confirms the importance and prestige once attached to this sacred place and seems to justify the frequent mentions made in historical records (often reminiscent of important Seleucid or Arsacid rulers). Statues of rulers that reproduce known prototypes, as the heroized ruler holding a spear, reminiscent of works attributed to Lysippus, once more confirm the international ambit of the complex.²²

The importance and prestige witnessed by statues, the propension to monumentality and, supposedly, the mentions in Greek and Roman sources don't seem to fit with the remoteness of the complex. It is unanimously shared that the complex at Kal-e Chendar was built in a very remote place (see chapter 1), and such a characteristic, along with the lack of any evidence of a settled area close to the complex itself (see chapters 2 and 5), could hardly find explanation: indeed the remoteness of the

²⁰ The statue derives from a prototype attributed to Lysippus: only parts of the face, the left arm and two fragments of the right arm and left leg have been recovered. The face is so damaged that it is impossible to identify the portrayed ruler. Identifications with Antiochus IV have been proposed (Rostovtzeff 1941, 66), as well as identification with an earlier Kamnaskirid (Lindström 2017, 184). This said, one can deem quite confidently that this is a piece reminiscent of the Hellenistic tradition, casted in the 2nd-1st century BCE. On the statue's fragments see Kawami 1987, 28; Mathiesen 1992, 88-89; on the more recent studies, see Lindström 2017; 2019; 2021; see also Canepa 2015b, 83-93.

²¹ Personal communication by Fabrizio Sinisi. Sinisi's identification is widely discussed in a forthcoming article to be published in the *Journal Iranica Antiqua*, entitled "The Statue of the 'Prince' of Shami: Parthian Nobleman, Local Ruler or Arsacid King of Kings?". More generally on the Parthian nobleman, see Kawami 1987, no. 8, pl. 11; Mathiesen 1992, 166-167, no. 80.

²² Some scholars think for instance to a dynastic sanctuary (Sherwin-White 1984).

terraced sanctuaries of Elymais has been many times emphasized in relevant literature.²³ Our survey has shown that the terraces and cemetery of Kal-e Chendar were isolated from inhabited areas, as it seems confirmed by the lack of surface records and archaeological materials.²⁴

The complex of Kal-e Chendar is far bigger than a simple sanctuary: the monumental terraces, the cemetery and the small fortresses built to guard them marked the landscape of an extensive area and appear to have been part of a large compound, characterized by a low-built environment. The discovery of further ancient ruins in proximity of Kal-e Chendar, in a place on the top of the Bilevah peak, known as Char Qal'eh, corroborates such an assumption (see chapters 2 and 5): massive structures built in undressed stones and polished stone blocks were probably used as a fortified place to defend the access to the Shami valley from a given moment, but it would not be surprising that further research will allow archaeologists to understand them as multifunctional buildings, in some way connected with the Kal-e Chendar complex.

That a particular significance was attached to the place is evident: this seems corroborated by the remoteness of the complex, a remoteness evidenced by the lack of any settlement but also by the position of Kal-e Chendar in the road network that can be reconstructed for the area. Along with the field survey we have conducted over the years (see chapter 2), research on the ancient overground route system of highland Elymais was carried out to understand the connective potential of the area, and the interrelation existing between the road network and the settlement patterns of the region. Such research was based on the cross-analysis of historical records, ancient cartography and remote sensing observations, also performing least cost path analysis (LCPA) thanks to algorithms purposely developed.²⁵ The trajectories of several possible routes crossing the mountains have been postulated considering different parameters, such as altitude, seasonality (rainy and dry conditions), ground conformation, presence of natural obstacles (such as watercourses). The road network so defined includes two main types of trajectories: one developing on a roughly north-south direction (north-west to south-east, more precisely), the other on a roughly west-east direction. The Shami valley is not a key node of such a network.

Our analysis seems to show that, at a regional level, overland routes particularly developed along north-south trajectories. These trajectories basically allowed the connection between the intermountain valleys that mark the piedmont of the Bakhtiari chain: for instance, the plain of Izeh was connected with the plain of Shimbar by overland routes that, following different possible options, develop along north-south synclinal valleys. It is not easy to define which roads, within the reconstructed network, were of primary or secondary hierarchy; however, some valleys, such as primarily the Shami valley, could be sometimes avoided by the main trajectories. Instead, the Izeh plain is always intersected by regional overland routes: the fact that it was continuously settled since prehistoric times must be considered as the most probable reason for such a characteristic. This considered, one may also think that, in the highlands, the road network developed at a regional level was basically meant to put in connection the areas that allowed settlers to catch land at their best capability in mountainous ecological niches, that is to say intermountain rather than synclinal valleys. For this reason, north-south trajectories appear to have had a marked regional meaning.

Instead, west-east trajectories could have had both a regional and a supra-regional use. The latter trajectories were of basic importance to connect alluvia to the Iranian Plateau, especially the plains of Susa and Shushtar with Fars and the area of modern Esfahan. It is thus noteworthy that at least three of the four terraced sanctuaries so far recognized, Majid-e Sulayman, Bard-e Neshandeh and Qal'e-ye Bardi, were placed along the same west-east trajectory. This is clear when the geomorphological setting of the places where the three sanctuaries are located is considered. The ground conformation shows that these places mark the points of a route reaching the piedmont –and then the Plateau– from

²³ See Messina forthcoming and bibliography.

²⁴ It must be recalled that the lack of surface records and the low visibility of the human presence in mountainous landscape is not an indisputable proof for the absence of a settlement near the site, however.

²⁵ See chapter 5.4.2 and Giusto, Messina, forthcoming.

the Shushtar plain. On this route one can gain the altitude of 700 m above the sea level progressively over a distance of around 60 km: the mid-point of this ascent is at Majid-e Sulayman (at about 300 m asl), the highest points before reaching the Plateau are at Bard-e Neshandeh and Qal'e-ye Bardi (between 670 and 680 m asl). From there, overland routes rise to the Plateau to reach the area of present day Shahrekord. These three sanctuaries were thus nodes of a route system that allowed the movement over mid- and long-range distances; as such, they were also important landmarks.

The size and monumentality of the terraces could be clearly perceived from afar and the existence of small fortresses adjacent to the terraces themselves leads one to suppose that these sanctuaries were also meant to contribute to the control of the territory. Sparse small settlements in the sanctuaries' environments could have allowed small communities to live along this network, and garrisons to guard the fortresses. Even if not densely settled, the areas where these sanctuaries were located appear to have been quite regularly travelled.

Unlike the former sanctuaries, the complex of Kal-e Chendar is placed outside mid- or long-range road systems. The fortresses there identified were thus built with the sole purpose of guarding the site. Some of the roads reconstructed thanks to our cross-analysis seem to develop along north-south directions that avoid the Shami valley to reach the Susan plain.²⁶ Only one route reaches the Shami valley via the Piyun area thanks to an access granted from the south. Such a road seems easier to travel in summer seasons when watercourses are crossable due to their lower flow. The road could have ended in the Shami valley, or it could have crossed the Bilevah mountain via the ancient site of Char Qal'eh, even if the latter possibility seems less feasible due to altitude. Other paths can be devised that reached the river Karun and the area of Tepe Gurtin, but these follow crests and peaks that appear quite impracticable for long periods of the year. In a few words, the Shami valley and the complex of Kal-e Chendar could have been the destination of a road branching from the main north-south trajectories, which connected intermountain valleys and appear to have been avoided by the network rather developing west-eastward. The complex of Kal-e Chendar was not along main trajectories, it was the destination of a road that was likely travelled with the only purpose of reaching the sanctuary and the cemetery. This remoteness underlines the importance once attached to the complex: although uneasily reachable and isolated, the place was accessed quite regularly to perform religious and funerary practices, and to dedicate statues, even royal statues, on the Upper terrace.

Why such an important complex –a complex with no parallels in Elymais, as far as one can see– was established in such a remote place? Why terraces have been erected on a colluvial debris fan –indeed not the best surface to be used for this purpose? Our research did not provide evidence, archaeological or epigraphical, to support a thorough interpretation of this problem. As is well known, the peculiar features and attractiveness of some natural places always played an important role in the ideology and rituality of the people settled on the Plateau and, more in general, in mountain regions. One may think to a landscape agency when other places of the area, dated to more ancient periods, such as Kul-e Farah and Shikaft-e Salman, are taken into consideration. Seen from this perspective, the place of Kal-e Chendar has many peculiarities due to orogenesis (see chapter 3), with riverbeds, springs, hillocks, peaks, valley slopes and grottoes that may well have had a symbolic value and agency. One possibility, to be verified by future research, is that a symbolic open-air place, frequented because of its natural peculiarities (maybe already as a religious place) before the periods we were able to document, was monumentalized in the 3rd century BCE (thanks to the building of terraces) and connected to a cemeterial area to achieve a global dimension. Such an achievement could have been compelled by the need to give further emphasis to a place already highly reputed, to a place that already had agency on the people dwelling in the region. The experience made by our joint expedition at Hung-e Azhdar (nearly 20 km afar, as the crow flies), *mutatis mutandis*, shows that natural open-air sanctuaries, which had gained importance in the Hellenistic and Parthian periods, were frequented for millennia

²⁶ As cartographic sources, we have examined: a map scaled 1:50,000, produced by the National Geographic Organization (NGO): Sheet 5954III Keveshk (2002), (©NGO, IRI Army); a map produced by the Soviet Army, Topographic Section (VTU), series SK 42, scaled 1:100,000, Sheet I-39-136 (1976) (code: Г-428 I 76-T).

far before the last documented phase of occupation.²⁷ Unlike at Hung-e Azhdar, we didn't find material evidence to support such a continuity; however, we excavated following a spotted strategy, it must be repeated (see chapter 6.2), and there are areas of the site that remain largely unexplored: some of them seem particularly interesting from this point of view because of their conformation and surface features (see chapter 5).

The demolition of religious buildings once standing on the terraces and the smashing of dedicatory statues even portraying rulers seem attributable to a radical change in religious and funerary beliefs and practices in the area, as the results of an attempt to obliterate previous traditions in a *damnatio memoriae*. If one looks at the known records, and especially focuses on the absence of materiality datable to the Sasanian period, an argument *e silentio* to date the destruction and abandonment of the complex seems to be clearly found. This is an implication that needs to be understood in a larger framework of religious studies, which considers the complexity of the matter basing on materiality rather than on literary records exclusively.

Future excavations will probably contribute to better understand the complex of Kal-e Chendar, despite the hard legibility of its archaeological context. Additional material evidence from the cemeterial area will surely allow archaeologists to shed new light on the trends we have been able to detect; probably, the finding of new dedicational contexts in some points of the site will improve our knowledge of the practices once there performed. New contexts could be discovered that will provide fresh insights on peculiar architectural forms: along with the terrace at Qal'e-ye Bardi, some archaeological remains –to be verified– seem to indicate the possible presence of further terraced sanctuaries in highland Elymais.²⁸ However, the main feature enlightened by our research, the interference of religious and funerary functions, demand to be more thoroughly investigated from a religious historical perspective. A task that was impossible for us basing on the data we could acquire. This is an aspect of pivotal importance, which far exceeds the relevance of the complex in which it was identified.

²⁷ See Messina (ed.) 2015, 203-206.

²⁸ See e.g. the preliminary information on the sites of Cafè Babak and Batvand available in Sardari Zarchi *et al.* 2014; Atarpour 2018.

Bibliography

- Abdallah, Z. R., al-Fityan, M. 1979, *Tell Aswad*, Baghdad.
- Adachi, T. 1997, "The fine carinated bowls in the Iron Age", *Bulletin of the Ancient Orient Museum XVIII*, 41-55.
- Adachi, T. 2005, "Considering the regional differences in the Parthian fine pottery", *al-Rāfidān* 26, 25-36.
- Alavi, M. 1980, Tectonostratigraphic evolution of the Zagrosides of Iran, *Geology* 8:3, 144-149.
- Alavi, M. 1991, Tectonic map of the Middle East: Tehran, *Geological Survey of Iran*, scale 1: 5,000,000.
- Alavi, M. 1994, "Tectonics of the Zagros orogenic belt of Iran: new data and interpretations", *Tectonophysics* 229: 3-4, 211-238.
- Alavi, M. 2004, "Regional stratigraphy of the Zagros fold-thrust belt of Iran and its proforeland evolution", *American Journal of Science* 304, 1-20.
- Alavi, M. 2007, "Structures of the Zagros Fold-Thrust Belt in Iran", *American Journal of Science* 307, 1064-1095.
- Albenda, P. 1985, "Mirrors in the Ancient Near East", *Source. Notes in the History of Art IV*: 2-3, 2-9.
- Aleemahmoodi Sarab, S., Feghhi, J., Goshtasb, H, 2014, "Determining the Main Parameters Affecting on Forest Fire Using MLP Neural Network (Forests of Western Iran: Izeh)", *International Journal of Molecular Evolution and Biodiversity* 3: 4, 15-23.
- Algrain, I., Brisart, Th., Jubier-Galinier, C. 2008, "Les vases à parfum à Athènes aux époques archaïque et classique", in A. Verbanck-Piérard, N. Massar, D. Frère (eds), *Parfums de l'Antiquité. La rose et l'encens en Méditerranée, Catalogue de la exposition organisée du 6 juin au 30 novembre 2008 par le Musée Royal de Mariemont*, Morlanwelz. 145-164.
- Alibagi, S. 2017, "Additional Remarks about the Function of the so-called Anahita Temple", *The Digital Archive of Brief Notes & Iranian Review (DABIR)* 1: 4, 8-14.
- Alijani, B., Harman, J. R., 1985, "Synoptic Climatology of Precipitation in Iran", *Annals of the Association of American Geographers* 75:3, 404-416.
- Alizadeh, A. 1985, "A Tomb of the Neo-Elamite Period at Arjān, near Behbahan", *Archaeologische Mitteilungen aus Iran* 18, 49-73.
- Alizadeh, A. 2008, *Chogha Mish, vol. 2: The Development of a Prehistoric Regional Center in Lowland Susiana, Southwestern Iran; Final Report on the Last Six Seasons of Excavations, 1972-1978*, (Oriental Institute Publications 130), Chicago.
- Alizadeh, A. 2014, *Ancient Settlement Systems and Cultures in the Ram Hormuz Plain, Southwestern Iran: Excavations at Tall-e Geser and Regional Survey of the Ram Hormuz Area* (Oriental Institute Publications 140), Chicago.
- Allen, M. B., C. Saville, E. J.-P. Blanc, M. Talebian, and E. Nissen. 2013, "Orogenic plateau growth: Expansion of the Turkish-Iranian Plateau across the Zagros fold-and-thrust belt", *Tectonics* 32, 171-190.
- al-Saud, A. 2010, "Ayn Jawan", in A. I. Al-Ghabban, B. André-Salvini, F. Demange, C. Juvin, M. Cotty (eds), *Routes d'Arabie. Archéologie et Histoire du Royaume d'Arabie Saoudite*, Paris, 399-403.
- al-Sindi, K., Ibrahim, M. 1999, "Une nécropole représentative des diverses phases de Tylos: le Mont I de Shakhoura", in P. Lombard (ed.), *Bahreïn. La civilisation des deux mers. De Dilmoun à Tylos. Exposition présentée à l'Institut du Monde Arabe du 18 mai au 29 août 1999*, Paris, 156-159.
- Altaweel, M. 2005, "The Use of ASTER Satellite Imagery in Archaeological Contexts", *Archaeological Prospection* 12, 151-166.
- Alvarez-Mon, J. 2010, *The Arjan Tomb: at the Crossroads of the Elamite and Persian Empires* (Acta Iranica 49), Leuven.
- al-Zeebari, A. 1982, "Die Ausgrabungen der Universität Baghdad in Tell Aswad", *Archiv für Orientforschung, Beihefte* 19, (papers from the Rencontre Assyriologique Internationale 28, 1981), 189-209.
- Amiet, P. 2001, "La sculpture susienne à l'époque de l'empire parthe", *Iranica Antiqua* 36, 239-291.
- Amy, R., Seyrig, H. 1936, "Recherches dans la necropole de Palmyre", *Syria* 17, 229-266.
- Andersen, S. F. 2009, "The Chronological Development", in M. I. Salman, S. F. Andersen (eds), *The Tylos Period Burials in Bahrain, Volume 2, The Hamad Town DS 3 and Shakhoura Cemeteries*, Aarhus, 167-173.
- Andersen, S. F., Strehle, H., Tengberg, M., Salman, M. I. 2004, "Two Wooden Coffins from the Shakhoura Necropolis, Bahrein", *Arabian Archaeology and Epigraphy* 15, 219-228.
- Andrae, W., Lenzen, H. 1933, *Die Partherstadt Assur* (Wissenschaftliche Veröffentlichung der Deutschen Orient-Gesellschaft 57), Leipzig.

- Andronicos, M. 1989, *Verghina. Le tombe reali*, Montichiari.
- Appadurai, A. (ed.) 2001, *Globalisation*, Durham.
- Arnold, D. E. 1985, *Ceramic Theory and Cultural Process*, Cambridge.
- Arnold, D. E. 2005, "Linking Society with the Compositional Analyses of Pottery: a Model from Comparative Ethnography", in A. Livingstone Smith, D. Bosquet, R. Martineau (eds), *Pottery Manufacturing Processes: Reconstitution and Interpretation* (BAR International Series 1349), 15-21.
- Arvanitopoulos, A. S. 1912, *Ai graptai stelai Demetriados-Pagason*, Athinai.
- Arvanitopoulos, A. S. 1915, "Anaskaphai kai ereunai en Thessalia", *RAAN* (1915), 131-200.
- Aston, B. G. 1994, *Ancient Egyptian stone vessels: materials and forms* (Studien zur Archäologie und Geschichte Altägyptens 5), Heidelberg.
- Aston, B. G., Harrell, J. A., Shaw, I. 2000, "Stones", in P. T. Nicholson, I. Shaw (eds), *Ancient Egyptian Materials and Technology*, Cambridge, 5-77.
- Atarpour, S. 2018, "Elymais Terraces on the Northeastern Khuzistan", in M. H. A. Kharanghi, M. Khanipour, R. Naseri (eds), *Proceedings of the International Congress of Young Archaeologists*, Teheran, 836-871 (in Persian).
- Athanassiadou, A., Klinaki, E., Alvanou, E., Gerofoka, E., Papathanasiou, M., Kyprianou, V., Rogoti, K., Kazantzani, E., Adamidou, A. 2019, "Ta ekpaideutiká prográmmata tīs KZ' Ephoreías Proistorikón kai Klasikón Archaíotítōn", *Archaiologikó Érgo stī Makedonía kai stī Thráki* 28, 243-250.
- Augé, C., Curiel, R., Le Rider, G. 1979, *Terrasses sacrée de Bard-è Néchandeh et Masjid-i Solaiman. Les Trouvailles monétaire* (Mémoires de la Délégation Archéologique en Iran XLIV), Paris.
- Azadi, A., Ghezelbash, E., Kouhi Gilavan, M., 2018, "A new found from Mansourabad Behbahan based on archaeological surveys", *Parseh Journal of Archaeological Studies* 2: 4, 99-120 (in Persian).
- Azandaryani, E. H., Khaksar, A., BabaKamal, Y. H. 2016, "Evidence of the Greek Goddess (Tyche?) in the Underground Troglodytic Handmade Architectural Complex of Samen in Malayer, Western Iran", *International Journal of Archaeology* 4, 1-6.
- Azarnoush, M. 1981, "Excavations at Kangavar", *Archäologische Mitteilungen aus Iran* 14, 69-94.
- Bacci, G. M., Coppolino, P., Arizia, M. 2018, "Epitymbia monumentali nella necropoli di Abakainon", in C. Malacrino, S. Bonomi (eds), *Ollus leto datus est. Architettura, topografia e rituali funerari nelle necropoli dell'Italia meridionale e della Sicilia tra Antichità e Medioevo*, Reggio Calabria, 367-374.
- Bachelot, L., Braun, J. P., Calvet, Y., Forest, J. D. 1983, "Rapport préliminaire sur la 8^{ème} campagne à Larsa (1978)", in J.-L. Huot (ed.) *Larsa et 'Oueili. Travaux de 1978-1981*, Paris, 205-228.
- Badinou, P. 2003, *La laine et le parfum*, Louvain.
- Bahramiyan, S. 2019, "Probable Evidence of a Middle Palaeolithic Site in the Northern Parts of the Susiana Plain, Khuzestan, Iran", *Documenta Praehistorica* 46, 424-433.
- Balatti, S. 2017, *Mountain Peoples in the Ancient Near East. The Case of Zagros in the First Millennium BCE*, Wiesbaden.
- Banning, E.B. 1996, "Highlands and Lowlands: Problem of Survey Frameworks for Rural Archaeology in the Near East", *Bulletin of the American Schools of Oriental Research* 301, 25-45.
- Baqherian A., Bucci, I., Cellerino, A., Foietta, E., Mehr Kian, J., Messina, V., Rouhani Rankhoui, M. 2016, "Preliminary report on the first season of excavation of the Iranian-Italian Joint Expedition in Khuzestan at Kal-e Chendar, Shami (6th campaign, 2013)", *Parthica* 18, 31-52.
- Barnett, R. D., Davis, L.G. 1975, *A catalogue of the Nimrud Ivories: With other examples of Ancient Near Eastern Ivories in the British Museum*, London.
- Barré, M. L. 1840, *Herculanum et Pompéi. Recueil général des peintures bronzes, mosaïques, etc.*, Paris.
- Beck, H. C. 1928, "Classification and Nomenclature of Beads and Pendants", *Archaeologia* 77, 1-76.
- Benson, J. L. 1983, "A Pilgrim Flask of Cosmopolitan Style in the Cesnola Collection", *Metropolitan Museum Journal* 18, 5-16.
- Bessios, M. 2010, *Pieridōn stéphanos: Pýdna, Methónē kai oi archaiótites tīs bóreias Pierías, Katerini*.
- Bessios, M., Athanassiadou, A. 2015, "Nekrotafeía chóras Pýdnas", *Archaiologikó Érgo stī Makedonía kai stī Thráki* 25, 181-188.
- Bleibtreu, E. 1987-1990, "Löffel", *Reallexikons der Assyriologie und Vorderasiatischen Archäologie* 7, 75-77.
- Bliquez, L. J. 2003, "Roman surgical spoon-probes and their ancient names (μίλη, μιλωτίς/μιλωτρίς, *specillum*)", *Journal of Roman Archaeology* 16, 322-330.
- Blondé, F., Ballet, P., Salles, J. -F. (eds) 2002, *Céramiques hellénistiques et romaines, productions et diffusion en Méditerranée orientale (Chypre, Égypte et côte syro-palestinienne)* (Travaux de la Maison de l'Orient méditerranéen 35), Lyon.
- Bobek, H. 1968, "Vegetation", in W. B. Fisher (ed.), *The Cambridge History of Iran, Vol. I, The Land of Iran*, London-New York, 280-293.

- Boehmer, R. M., Pedde, F., Salje, B. 1995, *Uruk: die Gräber* (Ausgrabungen in Uruk-Warka. Endberichte 10), Mainz am Rhein.
- Boivin, N., Frachetti, M. D. (eds) 2018, *Globalization in Prehistory. Contact, Exchange, and the 'People Without History'*, Cambridge.
- Boucharlat, R. 1987, "Les niveaux post-achéménides à Suse, secteur nord. Fouilles de l'Apadana-Est et de la Ville Royale-ouest (1973-1978)" *Cahiers de la Délégation Archéologique Française en Iran* 15, 145-311.
- Boucharlat, R. 1993, "Pottery in Susa, during the Seleucid, Parthian and Early Sassanian Periods", in U. Finkbeiner (ed.), *Materialien zur Archäologie der Seleukiden- und Partherzeit im südlichen Babylonien und im Golfgebiet, Ergebnisse der Symposien 1987 und 1989 in Blaubeuren*, Tübingen, 41-57.
- Boucharlat, R. 1999, "Zoroastrisme et pratiques funéraires", *Dossiers d'Archéologie* 243, 85-89.
- Boucharlat, R. 2005, "Iran", in P. Briant, R. Boucharlat (eds), *L'archéologie de l'Empire achéménide: nouvelles recherches* (Persika 6), Paris. 221-292.
- Boucharlat, R. 2014, "L'Iran à l'époque hellénistique et parthe: un état des données archéologiques", in P. Leriche (ed.), *Art et Civilisations de l'Orient hellénisé. Rencontres et échanges culturels d'Alexandre aux Sassanides. Hommage à Daniel Schlumberger*, Paris, 123-138.
- Boucharlat, R., Haerinck, E. 1991a, "Ceramics in Iran. The Achaemenian period", in E. Yarshater (ed.) *Encyclopaedia Iranica* V: 3, London-New York, 302-304.
- Boucharlat, R., Haerinck, E. 1991b, "Ceramics in Iran. The Parthian and Sasanian periods", in E. Yarshater (ed.) *Encyclopaedia Iranica* V: 3, London-New York, 304-307.
- Boucharlat, R., Haerinck, E. 2011, *Tombes d'époque parthe (chantiers de la Ville des Artisans)* (Mémoires de la Délégation Archéologique en Iran XXXV), Leiden-Boston.
- Boucharlat, R., Labrousse, A. 1979, "Les palais d'Artaxerxes II sur la rive droite du Chaour a Suse", *Cahiers de la Délégation Archéologique Française en Iran* 10, 21-36.
- Bouquillon, A., Poirot, J.-P. 1995, "Catalogue. Les minéraux et leur origine" ", in F. Tallon (ed.), *Les pierres précieuses de l'Orient ancien des Sumériens aux Sassanides*, Paris, 33-38.
- Boyce, M., Grenet, F. 1991, *A History of Zoroastrianism, Vol. III. Zoroastrianism under Macedonian and Roman Rule*, Leiden-New York-København-Köln.
- Briant, P. 1976, "'Brigandage', dissidence et conquête en Asie achéménide et hellénistique", *Dialogue d'histoire ancienne* 2, 163-258.
- Briant, P. 1982, *État et pasteurs au Moyen-Orient ancien*, Cambridge-Paris.
- Bricault, L., Versluys, M. J. (eds) 2011, *Power, Politics and the Cults of Isis. Proceedings of the Vth International Conference of Isis Studies, Boulogne-sur-Mer, October 13-15, 2011 (organised in cooperation with Jean-Louis Podvin)*, Leiden-Boston.
- Bucci, I., Cellierino, A., Faraji, M., Fioletta, E., Mehr Kian, J., Messina, V., Rouhani Rankhoui, M. 2017, "Preliminary report on the second season of excavation of the Iranian-Italian Joint Expedition in Khuzestan at Kal-e Chendar, Shami (7th campaign, 2014)", *Parthica* 19, 9-26.
- Bucci, I., Cellierino, A., Faraji, M., Fioletta, E., Mehr Kian, J., Messina, V., Rouhani Rankhoui, M. 2018, "Preliminary report on the third season of excavation of the Iranian-Italian Joint Expedition in Khuzestan at Kal-e Chendar, Shami (8th campaign, 2015)", *Parthica* 20, 59-78.
- Buchholz, H.-G. 2001, "Siebkannen", *Report of the Department of Antiquities, Cyprus 2001*, 107-150.
- Callieri, P. 1995, s.v. "Kangāvar", *Enciclopedia dell'Arte Antica, Classica ed Orientale III, Secondo Supplemento 1971-1994*, Roma, 166-167
- Callieri, P. 2015, "Hellenistic Art on the Iranian Plateau: Movement of Objects, Movement of People", *Journal of Historical, Philological and Cultural Studies* 1, 12-20.
- Canepa, M. P. 2015a, "Dynastic Sanctuaries and the Transformation of Iranian Kingship between Alexander and Islam", in S. Babaie, T. Grigor (eds), *Persian Kingship and Architecture. Strategies of Power in Iran from the Achaemenids to the Pahlavis*, London-New York, 65-117.
- Canepa, M. P. 2015b, "Bronze Sculpture in the Hellenistic East", in J. M. Daehner, K. Lapatin (eds), *Power and Pathos. Bronze Sculpture of the Hellenistic World*, Los Angeles, 83-93.
- Casana, J. 2013, "Radial Route Systems and Agro-Pastoral Strategies in the Fertile Crescent: New Discoveries from Western Syria and Southwestern Iran", *Journal of Anthropological Archaeology* 32, 257-273.
- Cavallero, M. C. 1967, "The Excavations at Coche, Area II", *Mesopotamia* II, 48-56.
- Cavallo, A. 2004, "Αλάβαστρα μύρου. Morfologia, uso e diffusione degli alabastra in alabastro calcareo nel mondo greco e greco-coloniale tra VI e IV secolo a.C. I rinvenimenti di Locri Epizefiri", *Rivista di Studi Liguri* 70, 235-274.
- Cellierino, A. 2004, "La ceramica dal sondaggio di Shu-Anna a Babilonia", *Mesopotamia* XXXIX, 93-168.

- Cellerino, A. 2015, "The Pottery", in V. Messina (ed.), *Hung-e Azhdar. Research of the Iranian-Italian Joint Expedition in Khuzestan (2008-2011)* (Archaeological Reports 1), *Parthica* 17, 123-176.
- Cellerino, A. 2021, "Transparent glass drinking bowls at the Assyrian court: visual appeal of wine consumption", *Mesopotamia* LVI, 125-138.
- Cellerino, A. 2022, "Continuità e innovazione nella produzione ceramica di epoca ellenistico-partica da Shami, antica Elimaide (Khuzestan, Iran)", in S. Graziani, G. Lacerenza (a cura di), *Egitto e Vicino Oriente Antico tra passato e futuro. The Stream of Tradition: la genesi e il perpetuarsi delle tradizioni in Egitto e Vicino Oriente antico, Atti del II Convegno EVOA, Napoli, 13-14 giugno 2019*, Napoli, 159-168.
- Cellerino, A. 2023, "Ceramic Innovations and Conservatism in Hellenizing Elymais: The Glazed Pottery from Shami", in N. Marchetti, M. Campeggi, F. Cavaliere, C. D'Orazio, G. Giacosa, E. Mariani (eds), *Proceedings of the 12th International Congress on the Archaeology of the Ancient Near East. Vol. 1: Environmental Archaeology. Hammering the Material World. Cognitive Archaeology. Modeling the Past. Networked Archaeology. Endangered Cultural Heritage*, Bologna, 6-9 April 2021, Wiesbaden, 301-314.
- Cellerino, A., Fioletta, E. 2020, "The Sanctuary and Cemetery at Kal-e Chendar, Shami (Khuzestan, Iran)", in A. Otto, M. Herles, K. Kaniuth (eds), *Proceedings of the 11th International Congress on the Archaeology of the Ancient Near East. Vol. 2: Field Reports. Islamic Archaeology*, Munich 3-7 April 2018, Wiesbaden, 55-68.
- Centlivres Challet, C. -E. 2016, "Tire-lait ou biberons romains?", *L'Antiquité Classique* 85, 157-180.
- Cereti, C. G., Gondet, S. 2015, "The Funerary Landscape Between Naqš-e Rostam and Estahṛ (Persepolis region). Discovery of a New Group of late Sasanian Inscribed Rock-cut Niches", *Iranica Antiqua* 50, 367-403.
- Chapman, H. 2009, *Landscape Archaeology and GIS*, Stroud.
- Chryssanthaki-Nagle, K. 2006, "Les protomés et les protomés-bustes féminines de Macédoine et de Thrace revisités : l'exemple des protomés-bustes de la maison A de Tragilos", *Revue Archéologique* 41, 3-31.
- Clairmont, C. W. 1963, *The Excavations at Dura-Europos. Final Report IV. Part V: The Glass Vessels*, New Haven.
- Clark, G. 1986, *Symbols of excellence. Precious materials as expressions of status*, Cambridge.
- Cleuziou, S., Lombard, P., Salles, J.-F. 1981, *Fouilles a Umm Jidr (Bahrain)* (Recherche sur les grandes civilisations, Mémoire 7), Paris.
- Colivicchi, F. 1997, "Gli alabastra tardo-ellenistici e romani. La documentazione delle necropoli tarantina", *Mélanges de l'École française de Rome, Antiquité* 109: 1, 199-261.
- Colledge, M. A. R. 1976, *The Art of Palmyra*, London.
- Collon, D. (ed.) 2008, "Nimrud Treasures: Panel Discussion", in J. E. Curtis, H. McCall, D. Collon, L. al-Gailani Werr (eds), *New Light on Nimrud. Proceedings of the Nimrud Conference 11th-13th March 2002*, London, 105-118.
- Connolly, J., Lake, M. 2006, *Geographical Information Systems in Archaeology*, Cambridge.
- Cool, H. E. M. 2004, "Some Notes on Spoons and Mortaria", in B. Croxford, H. Eckardt, J. Meade, J. Weekes, (eds) *TRAC 2003: Proceedings of the Thirteenth Annual Theoretical Roman Archaeology Conference, Leicester, 3-6 April 2003*, Oxford, 28-35.
- Cormack, S. 2004, *The space of death in Roman Asia Minor* (Wiener Forschungen zur Archäologie 6), Wien.
- Coulton, J. J. 2013, "Pedestals as 'altars' in Roman Asia Minor", *Anatolian Studies* 55, 127-157.
- Cubas, M., Doherty, C., Garcia-Heras, M., De Pedro, I., Mendez, D., Ontanon, R. 2014, "Pottery Manufacturing During the Neolithic in the North of Spain: Raw Material Procurement and Modification in the Cave of Los Gitanos (Castro Urdiales, Spain)", *Archaeometry* 56, Suppl. 1, 19-35.
- Cumont, F. 1939, "Les bronzes gréco-parthes de Shami", *Syria* 20: 2, 167-168.
- Cuomo di Caprio, N. 2007, *Ceramica in archeologia 2. Antiche tecniche di lavorazione e moderni metodi di indagine*, Roma.
- Curtis, J. 1976, "Parthian Gold from Nineveh", *The Classical Tradition. The British Museum Yearbook* 1, 47-66.
- Curtis, J. 1995, "Gold Face-Masks in the Ancient Near East", in S. Campbell, A. Green (eds), *The Archaeology of Death in the Ancient Near East*, Oxford, 226-231.
- Curtis, J. 2013, *An Examination of late Assyrian Metalwork with special reference to Nimrud*, Oxford.
- Daems, A. 2001, "The Iconography of Pre-Islamic Women in Iran", *Iranica Antiqua* 36, 1-82.
- Damerji, M. S. 1998, "Gräber assyrischer Königinnen aus Nimrud", *Jahrbuch des Römisch-Germanisches Zentralmuseum* 45, 1-84.
- Damjanovic, L., Bikic, V., Saric, K., Eric, S., Holclajtner-Antunovic, I. 2014, "Characterization of the early Byzantine pottery from Caričin Grad (South Serbia) in terms of composition and firing temperature", *Journal of Archaeological Science* 46, 156-172.

- D'angelo, B. 2010, "The Evolution of the Macedonian Tomb: Hellenistic Funerary Architecture Revisited", *Patrimonium* 7: 8, 57-68.
- D'amore, P. 2007, "L'oro dell'altopiano. Gioielleria iranica del periodo del ferro", in Balbi de Caro, S. (ed.), *Gioielli dall'Iran. Oreficeria e cosmesi*, 23-29.
- Darabi, H., Bangsgaard, P., Arranz-Otaegui, A., Golnaz Ahadi, G., Olsen, J. 2021, "Early Neolithic Occupation of the Lowlands of South-Western Iran: New Evidence from Tapeh Mahtaj", *Antiquity* 95: 379, 27-44.
- Daszewski, W. A. 1997, "Mummy Portraits from Northern Egypt: The Necropolis in Marina el-Alamein", in M. L. Bierbrier (ed.), *Portraits and Masks. Burial Customs in Roman Egypt*, London, 59-65.
- Davidson, G. R. 1952, *Corinth XII. The Minor Objects*, Princeton.
- Davit, P., Turco, F., Operti, L., Borghi, A., Cellerino, A. 2020, "Archaeometric Investigation of Pottery from Funerary Gifts in Kal-e Chendar, Shami (Khuzestan, Iran)", *Archaeometry* 62: 4, 731-751.
- Dayagi-Mendels, M. 1999, *Drink and Be Merry. Wine and Beer in Ancient Times*, Jerusalem.
- Debevoise, N.C. 1934, *Parthian Pottery from Seleucia on the Tigris*, Ann Arbor.
- De Bonis, A., Cultrone, G., Grifa, C., Langella, A., Leone, A. P., Mercurio, M., Morra, V. 2017, "Different Shades of Red: The Complexity of Mineralogical and Physico-Chemical Factors Influencing the Colour of Ceramics", *Ceramics International* 43, 8065-8074.
- de Jong, L. 2010, "Performing Death in Tyre: The Life and Afterlife of a Roman Cemetery in the Province of Syria", *American Journal of Archaeology* 114: 4, 597-630.
- de Jong, L. 2017, *The Archaeology of Death in Roman Syria. Burial, Commemoration, and Empire*, Cambridge.
- de Larminat, S. 2012, "Le mobilier déposé dans les sépultures d'enfants en Afrique du nord à l'époque romaine", in A. Hermary, C. Dubois (eds), *L'enfant et la mort dans l'Antiquité III : le matériel associé aux tombes d'enfants. Actes de la table ronde internationale organisée à la Maison Méditerranéenne des Sciences de l'Homme (MMSH) d'Aix-en-Provence, 20-22 janvier 2011*, Arles, 293-312.
- Delougaz, P., Kantor, H. J. 1996, *Chogha Mish, 1: The First Five Seasons of Excavations 1961-1971* (Oriental Institute Publications 101), Chicago.
- de Miroschedji, P. 1978, "Stratigraphie de la période néo-élamite de Suse (c. 1110-c. 540)," *Paléorient* 4, 213-227.
- de Miroschedji, P. 1981, "Prospection archéologique au Khuzistan en 1977", *Cahiers de la Délégation Archéologique Française en Iran* 12, 169-174.
- de Miroschedji, P. 1987, "Fouilles du chantier Ville Royale II à Suse (1975-77). Niveaux d'époques achéménide, séleucide, parthe et islamique", *Cahiers de la Délégation Archéologique Française en Iran* 15, 11-143.
- Dentzer-Feydy, J.-M., Teixidor, J. (eds) 1993, *Les antiquités de Palmyre au Musée du Louvre*, Paris.
- de Planhol, X. 1969, "Le déboisement de l'Iran", *Annales de Géographie* 78: 430, 625-635.
- Descamps-Lequime, S., Charatzopoulou, K. (eds) 2011, *Au royaume d'Alexandre le Grand. La Macédoine antique*, Paris.
- Despini, A. 1998, "Chrysa epistómia", in M. Lilimpakē-Akamatē, K. Tsakalou-Tzanavarē (eds), *Mneías chárin. Tómos stī mnēmi M. Sigandou*, Thessaloniki, 65-80.
- Despini, A. 2009, "Gold Funerary Masks", *Antike Kunst* 52, 20-65.
- de Waele, É. 1982, "La stèle funéraire élymienne d'Ab-e Atabeq près de Mehernan sur le Karun", in J. Quaegebeur (ed.), *Studia Paulo Naster Oblata II, Orientalia Antiqua*, Leuven, 37-48.
- Dewan, M.L., Famouri J. 1964, *The Soils of Iran*, FAO, Rome.
- Dimakis, N. 2019, "Burial and Commemoration of Children in Hellenistic Greece", in H. Frielinghaus, J. Stroszeck, P. Valavanis (eds), *Griechische Nekropolen. Neue Forschungen und Funde*, Mohnesee, 287-306.
- Dinarvand, Y., Mehranpour, H. 2015, "Paleolithic Open-air Sites, North of Susiana Plain in South West Iran, Khuzestan Province, East of Dez River", *Ancient Asia* 6: 6, 1-4.
- Djamali, M., Akhiani, H., Khoshravesh, R., Andrieu-Ponel, V., Ponel, P., Brewer, S. 2011, "Application of the Global Bioclimatic Classification to Iran: Implications for Understanding the Modern Vegetation and Biogeography", *Ecologia Mediterranea* 37: 1, 91-114.
- Domenech-Carbo, M. T., Domenech-Carbo, A., Osete-Cortina, L., Sauri-Peris, M. C. 2006, "A Study on Corrosion Processes of Archaeological Glass from the Valencian Region (Spain) and its Consolidation Treatment", *Microchim Acta* 154, 123-142.
- Downey, S. 1988, *Mesopotamian Religious Architecture. Alexander through the Parthians*, Princeton.
- Drougou, S., Toratsoglou, I. 2013, "Die hellenistische Keramik Makedoniens außerhalb des Landes", in N. Fenn, C. Römer-Strehl (eds), *Networks in the Hellenistic World: According to the pottery in the Eastern Mediterranean and beyond* (BAR International Series 2539), Oxford, 47-57.
- Dubois, C. 2012, "Des objets pour les bébés ? Le dépôt de matériel dans les sépultures d'enfants en bas âge du monde grec (VI^e-IV^e) s. av. notre ère", in A. Hermary, C. Dubois (eds), *L'enfant et la mort*

- dans *l'Antiquité III: le matériel associé aux tombes d'enfants. Actes de la table ronde international organisée à la Maison Méditerranéenne des Sciences de l'Homme (MMSH) d'Aix-en-Provence, 20-22 janvier 2011*, Arles, 329-342.
- Duda, D. 1979, "Die Grabung in U/V XVIII, 30. Kampagne. II. Die Keramik", in J. Schmidt (ed.), *XXIX. und XXX. vorläufiger Bericht über die von dem Deutschen Archäologischen Institut aus Mitteln der Deutschen Forschungsgemeinschaft unternommenen Ausgrabungen in Uruk-Warka: 1970/71 und 1971/72*, Berlin, 50-68.
- Dusinberre, E. R. M. 1999, "Satrapal Sardis. Achaemenid Bowls in an Achaemenid Capital", *American Journal of Archaeology* 103, 73-102.
- Dusinberre, E. R. M. 2003, *Aspects of Empire in Achaemenid Sardis*, Cambridge.
- Ehlers, E. 2012, "Forest and Forestry i. In Persia", *Encyclopedia Iranica* X: 1, 86-90.
- Eisenberg, M., Kowalewska, A. 2021, "Funerary Podia of Hippos of the Decapolis and the Phenomenon in the Roman World", *Journal of Roman Archaeology* 35: 1, 107-138.
- Elhaesahar, M., Masoudi, M. 2018, "Hazard Assessment of Livestock Pressure in Khuzestan Province, Iran", *Iran Agricultural Research* 37: 2, 45-52.
- el-Moslimany, A. P. 1982, "The Late Quaternary Vegetational History of the Zagros and Taurus Mountains in the Regions of Lake Mirabad, Lake Zeribar and Lake Van", in J. L. Bintliff, W. Van Zeist (eds), *Palaeoclimates, Palaeoenvironments and Human Communities in the Eastern Mediterranean Region in Later Prehistory*, Oxford, 343-350.
- Eqbal, H. 1979, "The Seleucid, Parthian and Sasanian Periods on the Izeh Plain", in H. T. Wright (ed.), *Archaeological Investigations in Northeastern Xuzestan, 1976*, Ann Arbor, 114-123.
- Erb-Satullo, N. L., Shortland, A. J., Eremin, K. 2011, "Chemical and Mineralogical Approaches to the Organization of Late Bronze Age Nuzi Ware Production", *Archaeometry* 53: 6, 1171-1192.
- Erskine, A., Llewellyn-Jones, L. (eds) 2011, *Creating a Hellenistic World*, Swansea.
- Faraji, M., Mehr Kian, J., Sourani, Y. 2015, "Survey at Hung-e Azhdar" in V. Messina (ed.), *Hung-e Azhdar. Research of the Iranian-Italian Joint Expedition in Khuzestan (2008-2011)* (Archaeological Reports 1), *Parthica* 17, 63-79.
- Farjamirad, M. 2015, *Mortuary Practice in Ancient Iran from the Achaemenid to the Sasanian Period* (BAR International Series 2747), Oxford.
- Farjamirad, M. 2016, "Burial Customs during the Seleuco-Parthian Period of Iran; Greek or Local Culture?" in E. Foietta, C. Ferrandi, E. Quirico, F. Giusto, M. Mortarini, J. Bruno, L. Somma (eds), *Cultural and Material Contacts in the Ancient Near East. Proceedings of the International Workshop, Torino, 1-2 December 2014*, Sesto Fiorentino, 129-137.
- Farshad, A., Pazira, E., Noroozi, A. A. 2018, "Human-Induced Land Degradation", in M. H. Roozitalab, H. Siadat, A. Farshad (eds), *The Soils of Iran*, Berlin, 213-227.
- Farzaneh, A., Rastaghi, M. E. 2018, "Vegetation and Land Cover", in M. H. Roozitalab, H. Siadat, A. Farshad (eds), *The Soils of Iran*, Berlin, 57-71.
- Feldman, M. H. 2014, *Communities of Style. Portable Luxury Arts, Identity, and Collective Memory in the Iron Age Levant*, Chicago-London.
- Fenn, N., Römer-Strehl, C. (eds) 2013, *Networks in the Hellenistic World: According to the pottery in the Eastern Mediterranean and beyond* (BAR International Series 2539), Oxford.
- Finkbeiner, U. 1991, "Keramik der seleukidischen und parthischen Zeit aus den Grabungen in Uruk-Warka, 1. Bit Akitu, Bit Reš, Eanna, Irigal, J 18, K 18, Frehat en-Nufeği und Oberfläche", *Baghdader Mitteilungen* 22, 537-637.
- Finkbeiner, U. 1992, "Keramik der seleukidischen und parthischen Zeit aus den Grabungen in Uruk-Warka II. Teil Die Grabungen im Bereich des Gareus-Tempels und in den Arealen U-V 18", *Baghdader Mitteilungen* 23, 473-580.
- Finkbeiner, U. 1993, "Uruk Warka. Fundstellen der Keramik der Seleukiden- und Partherzeit", in U. Finkbeiner (ed.), *Materialien zur Archaologie der Seleukiden- und Partherzeit im südlichen Babylonien und im Golfgebiet, Ergebnisse der Symposien 1987 und 1989 in Blaubeuren*, Tübingen, 3-16.
- Finkel, I. L., Reade, J. E. 2002, "On Some Inscribed Babylonian Alabastra", *Journal of the Royal Asiatic Society* 12: 1, 31-46.
- Foietta, E. 2019, "Movable Altars and Burners in Stone from Hatra", *Mesopotamia* 54, 197-218.
- Forte, M. 2002, *I sistemi informativi geografici in archeologia*, Roma.
- Frey, W., Kürschner, H., Probst, W. 1999, "Flora ii. In Persia", *Encyclopaedia Iranica* X: 1, 46-63.
- Frey, W., Probst, W. 1986, "A Synopsis of the Vegetation of Iran", in H. Kürschner (ed.), *Contributions to the Vegetation of Southwest Asia*, Wiesbaden, 9-43.

- Furtwängler, A. 1997, “Metgidikighikà problemata chronologhèsès”, in L. Kypraiou (ed.), *D’Epistàmonikè Sunantèsè ghia tèn Ellènistikè Keramikè. Chronologhikà problèmata. Klestià synola-ergastèria*, Athens, 396-400.
- Gachet, J., Salles, J.F. 1993, “Failaka, Koweit” in U. Finkbeiner (ed.), *Materialen zur Archäologie der Seleukiden- und Partherzeit im südlichen Babylonien und im Golfgebiet, Ergebnisse der Symposien 1987 und 1989 in Blaubeuren, Tübingen*, 59-85.
- Gallo, P. 2016, “Se l’Egitto dei Romani è la costa alessandrina” in F. Poole (ed.) *Il Nilo a Pompei. Visioni d’Egitto nel Mondo Romano*, Modena, 63-87.
- Ganji, M.H. 1968, “Climate”, in W.B. Fisher (ed.), *The Cambridge History of Iran, Vol. I, The Land of Iran*, London-New York, 212-249.
- Gansell, A. R. 2007, “From Mesopotamia to Modern Syria: Ethnoarchaeological Perspectives on Female Adornment during Rites of Passage”, in M. Feldman, J. Cheng (eds), *Ancient Near Eastern Art in Context, Studies in Honor of Irene J. Winter by her students*, Boston, 449-483.
- Gansell, A. R. 2012, “Women in Ancient Mesopotamia”, in S. L. James, S. Dillon (eds), *A Companion to Women in the Ancient World*, Malden, 11-24.
- Gansell, A. R. 2016, “Imperial Fashion Networks: Royal Assyrian, Near Eastern, Intercultural, and Composite Style Adornment from the Neo-Assyrian Royal Women’s Tombs at Nimrud”, in J. Aruz, M. Seymour (eds), *Assyria to Iberia. Art and Culture in the Iron Age*, New Haven-London, 54-64.
- Gansell, A. R. 2018, “Dressing the Neo-Assyrian Queen in Identity and Ideology: Elements and Ensembles from the Royal Tombs at Nimrud”, *American Journal of Archaeology* 122: 1, 65-100.
- García Ramón, J. L., Helly, B. 2007, “Ennodia Koroutappa («celle qui dote de nourriture, de croissance») et autres divinités kourotrophes en Thessalie”, *Revue de philologie, de littérature et d’histoire anciennes* 81, 291-312.
- Gasche, H. 1996, *Les tombes Achéménides tardives et Seleucides de Tell ed-Der, Abu Qubur et Mahmudiyah*, (Mesopotamian History and Environment. Series 1: Northern Akkad Project Report), Ghent.
- Gasparini, V. 2016, “Il culto di Iside nelle dimore di Pompei ed Ercolano” in F. Poole (ed.) *Il Nilo a Pompei. Visioni d’Egitto nel Mondo Romano*, Modena, 63-87.
- Gavagnin, K., Iamoni, M., Palermo, R. 2016, “The Land of Nineveh Archaeological Project: The Ceramic Repertoire from the Early Pottery Neolithic to the Sasanian Period”, *Bulletin of the American Schools of Oriental Research* 375, 119-169.
- Geraghty, R. M. 2007, “The Impact of Globalization in the Roman Empire, 200 BC-AD 100”, *Journal of Economic History* 67: 4, 1036-1061.
- Gershuny, L. 1985, *Bronze Vessels from Israel and Jordan* (Prähistorische Bronzefunde 2.6), München.
- Ghasidian, E., Azadi, A., Heydari-Guran, S., Conard, J. N. 2009, “Late Paleolithic cultural traditions in the Basht Region of the Southern Zagros of Iran”, in M. Otte, F. Biglari, J. Jaubert (eds), *Actes du XV Congrès Mondial UISP. Iran Palaeolithic/Le Paléolithique d’Iran, Proceedings of the XV World Congress UISPP, Lisbon, 4-9 September 2006, Vol. 28, Session C15* (BAR International Series 1968), London, 125-140.
- Ghirshman, R. 1976, *Terrasses sacrées de Bard-è Néchandeh et Masjid-i Solaiman: l’Iran du sud-ouest du 8. s. av. n. ère au 5. s. de n. ère*, Leiden.
- Giardino, C. 2010, *I metalli nel mondo antico. Introduzione all’archeometallurgia*. Roma-Bari.
- Gibson, Mc G. 1975, *Excavations at Nippur, 11th Season* (Oriental Institute Communications 22), Chicago.
- Giusto, F., Messina, V. forthcoming, “Overland altitude. On mountain routes and trajectories of ancient Elymais”, in M. Blömer, M. Marciak, T. Schreiber (eds), *Trans-regional Encounters. Kingdoms and Principalities in the Taurus, Zagros, and Caucasus regions between 300 BCE and 200 CE*, (Classica et Orientalia), Wiesbaden
- Godard, A. 1937, “Les statues parthes de Shami”, *Athar-é Iran* 2, 285-305.
- Godard, A. 1962, *L’art de l’Iran*, Paris.
- Gopinath, C. 2008, *A Multidimensional System*, Los Angeles.
- Grammatikakis, I. E., Kyriakidis, E., Demadis, K. D., Cabeza Diaz, A., Leon-Reina, L. 2019, “Mineralogical Characterization and Firing Temperature Delineation on Minoan Pottery, Focusing on the Application of Micro-Raman Spectroscopy”, *Heritage* 2, 2652-2664.
- Gran-Aymerich, È., Marefat, M. 2001, “Godard, André”, *Encyclopaedia Iranica* XII: 1, 29-31.
- Graziadio, G. 2012, “The Importance of Mouth Coverings in the Late Cypriot Burial Customs”, in L. Bombardieri, A. D’Agostino, G. Guarducci, V. Orsi, S. Valentini (eds), *Identity and Connectivity. Proceedings of the 16th Symposium on Mediterranean Archaeology, Florence 1-3 March 2012* (BAR International Series 2581), London, 345-351.
- Griffiths, H. I., Schwalb, A., Stevens, L. R. 2001, “Environmental Change in Southwestern Iran: The Holocene Ostracod Fauna of Lake Mirabad”, *The Holocene* 11: 6, 757-764.

- Grossmann, R. A. 2002, *Ancient Glass. A Guide to the Yale Collection*, New Haven.
- Guldager Bilde, P., Lawall, M. L. (eds) 2014, *Pottery, Peoples and Places. Study and Interpretation of Late Hellenistic Pottery* (Black Sea Studies 16), Aarhus.
- Gulmini, M., Pace, M., Ivaldi, G., Negro Ponzi, M., Mirti, P. 2009, "Morphological and Chemical Characterization of Weathering Products on Buried Sasanian Glass from Central Iraq", *Journal of Non-Crystalline Solids* 355, 1613-1621.
- Gürbüz, A., Farzipour Saein, A. 2019, "Tectonic geomorphology of the Zagros orogeny", in A. Farzipour Saein (ed.), *Tectonic and Structural Framework of the Zagros Fold-Thrust Belt* (Developments in Structural Geology and Tectonics vol. 3), Amsterdam, 131-144.
- Guzzo, G. (ed.) 2006, *Argenti. Pompei, Napoli, Torino*, Catalogo della mostra, Torino, 5 ottobre 2006 - 4 febbraio 2007, Milano.
- Haerinck, E. 1980, "Les tombes et les objets du sondage sur l'enceinte de Abu Habbah", in L. De Meyer (ed.) *Sounding at Abu Habbah (Sippar)*, (Tell ed-Der III), Leuven, 53-79.
- Haerinck, E. 1983, *La céramique en Iran pendant la période parthe (ca. 250 av. J.C. à ca. 225 après J.C.)*. Typologie, chronologie et distribution, Ghent.
- Haerinck, E. 2018, "Unpublished Objects from Susa (SW-Iran) to be attributed to the Achaemenid to the Sasanid period", in S. Gondet, E. Haerinck (eds), *L'Orient est son Jardin. Hommage à Rémy Boucharlat* (Acta Iranica 58), Leiden, 211-224.
- Haerinck, E., Overlaet, B. 2013, "An Early Bronze Age Tomb near Khorramabad (W-Iran) – Herzfeld's Gilviran revisited", *Iranica Antiqua* 48, 39-76.
- Hannestad, L. 1983, *The Hellenistic Pottery from Failaka: with a Survey of Hellenistic Pottery from the Near East* (Jutland Archaeological Society Publications XVI/2), Aarhus.
- Hansman, J. F. 1973, "Three topographical problems in the southern Zagros", *Bulletin of the School of Oriental and African Studies, University of London* 36: 1, 43-54.
- Hansman, J. F. 1978, "Seleucia and the Three Douraks", *Iran* 16, 154-160.
- Hansman, J. F. 1990, "Coins and Mints of Ancient Elymais", *Iran* 28, 1-11.
- Harden, D. B. 1936, *Roman Glass from Karanis found by the University of Michigan Archaeological Expedition in Egypt 1924-29* (University of Michigan Humanistic Series 41), Ann Arbor.
- Harmatta, J. 1981, "Parthia and Elymais in the 2nd century BC", *Acta Antiqua Academiae Scientiarum Hungaricae* 29, 189-217.
- Hauser, S. 1993, "Eine arsakidenzeitliche Nekropole in Ktesiphon", *Baghdader Mitteilungen* 24, 325-420.
- Hausleiter, A. 2010, *Neuassyrische Keramik Im Kerngebiet Assyriens: Chronologie und Formen*, Wiesbaden.
- Hayes, J. W. 1975, *Roman and Pre-Roman Glass in the Royal Ontario Museum*, Toronto.
- Hayes, J. W. 1985, "Sigillate Orientali", in *Enciclopedia dell'arte antica classica e orientale. Atlante delle Forme Ceramiche II, Ceramica Fine Romana nel Bacino Mediterraneo (Tardo Ellenismo e Primo Impero)*, Rome, 1-96.
- Heinrich, E. 1935, *Sechster Vorläufiger Bericht über die von der deutschen Forschungs-Gemeinschaft in Uruk-Warka unternommenen Ausgrabungen* (Vorläufiger Bericht über die von der Notgemeinschaft der Deutschen Wissenschaft in Uruk-Warka unternommenen Ausgrabungen 6), Berlin.
- Heinz, M. 1998, *Thessalische Votivstelen. Epigraphische Auswertung, Typologie der Stelenformen, Ikonographie der Reliefs* (Dissertation Ruhr-Universität Bochum).
- Heinz, M. 2012, "(Re-)Constructing Funerary Rituals in the Ancient Near East. A reflecting View", in P. Pfäelzner, H. Niehr, E. Pernicka, A. Wissing (eds), *(Re-)Constructing Funerary Rituals in the Ancient Near East. Proceedings of the First International Symposium of the Tübingen Post-Graduate School "Symbol of the Dead"*, Tübingen, May 2009, Wiesbaden, 1-4.
- Henkelman, W. F. M. 2008, *The Other Gods Who Are. Studies in Elamite-Iranian Acculturation Based on the Persepolis Fortification Texts*, (Achaemenid History XIV), Leiden.
- Henry, O. 2011, "Hellenistic monumental tombs: the Π-shaped tomb from Labraunda and Karian parallels", in L. Karlsson, S. Carlsson (eds), *Labraunda and Karia: Proceedings of the International Symposium Commemorating Sixty Years of Swedish Archaeological Work in Labraunda* (BOREAS Uppsala Studies in Ancient Mediterranean and Near Eastern Civilizations 32), Stockholm, 20-21 November 2008, Uppsala, 150-159.
- Henry, S. E. 2016, *Hellenistic Gold Diadems. Form, Function and Meaning*, (Dissertation University of Glasgow, Christie's Education).
- Herrmann, G., Laidlaw, S. 2009, *Ivories from Nimrud VI. Ivories from the Northwest Palace (1845-1992)*, London.
- Herzog, I. 2014, "A Review of Case Studies in Archaeological Least-Cost Analysis", *Archeologia e Calcolatori* 25, 223-239.
- Higgins, R.A. 1970, *Greek and Roman Jewellery*, London.

- Hingley, R. 2005, *Globalizing Roman culture. Unity, Diversity and Empire*, London.
- Hinz, W. 1963, "Zwei Neuentdeckte partische Felsrelief", *Iranica Antiqua* 3, 169-173.
- Hodos, T. (ed.). 2017, *The Routledge Handbook of Archaeology and Globalization*, Abingdon.
- Hoffmann, H., Davidson, P. F. 1965, *Greek Gold. Jewellery from the Age of Alexander*, Mainz.
- Hoffmann, H., von Clear, V. 1968, *Antiker Gold- und Silberschmuck. Katalog mit Untersuchung der Objekte auf technischer Grundlage*. Mainz.
- Hoh, M. 1979, "Die Grabung in Ue XVIII i. 29. Kampagne", in J. Schmidt (ed.) XXIX. und XXX. vorläufiger Bericht über die von dem Deutschen Archäologischen Institut aus Mitteln der Deutschen Forschungsgemeinschaft unternommenen Ausgrabungen in Uruk-Warka: 1970/71 und 1971/72, Berlin, 28-35.
- Hopkins, A. G. (ed.) 2002, *Globalisation in World History*, London.
- Hopkins, C. 1972, *Topography and Architecture of Seleucia on the Tigris*, Ann Arbor.
- Hoss, S., Whitmore, A. 2016, "Introduction. Small Finds and Ancient Social Practices", in S. Hoss, A. Whitmore (eds), *Small Finds and Ancient Social Practices in the North-West Provinces of the Roman Empire*, Oxford, 1-7.
- Howes Smith, P. H. G. 1986, "A study of 9th-7th century metal bowls from Western Asia", *Iranica Antiqua* 21, 1-88.
- Huff, D. 1975, "Nurabad, Dum-i Mill," *Archäologische Mitteilungen aus Iran* 8, 67-209.
- Huff, D. 2004, "Archaeological Evidence of Zoroastrian Funerary Practice", in M. Stausberg (ed.), *Zoroastrian Rituals in Context*, Leiden, 593-630.
- Hunt, A. M. W. 2015, *Palace Ware across the Neo-Assyrian Imperial Landscape: Social Value and Semiotic*, Leiden.
- Hussein, M. M. 2016, *Nimrud. The Queens' Tombs*, Chicago.
- Huot, J.-L., Bachelot, L., Kepinski, C., Lecomte, O., Suire, J. 1987, "Rapport préliminaire sur la dixième campagne à Larsa (1983)", in J. - L. Huot (ed.), *Larsa (10e campagne, 1983) et 'Oueili. 4e campagne, 1983. Rapport préliminaire*, Paris, 169-182.
- Hussein, M. M., Suleiman, A. 2000, *Nimrud. A city of Golden Treasures*, Baghdad.
- Inizan, M.-L. 1995, "Cornaline et agate : production et circulation de la préhistoire à nos jours", in F. Tallon (ed.), *Les pierres précieuses de l'Orient ancien des Sumériens aux Sassanides*, Paris, 21-24.
- Invernizzi, A. 1973-1974, "The Excavations at the Archives Building", *Mesopotamia* VIII-IX, 9-14.
- Invernizzi, A. 2008, "Les dominations Grecque et Parthe", in B. André-Salvini (ed.), *Babylone*, Paris, 251-258.
- Ippel, A. 1922, *Der Broncefund von Galjûb*, Berlin.
- Isings, C. 1957, *Roman Glass from Dated Finds*, Groningen - Djakarta.
- Jacobsthal, P. 1956, *Greek Pins and their Connections with Europe and Asia*, Oxford.
- Jaeggi, S., Wittmann, A., Garnier, N. 2015, "Biberon or not Biberon? Les analyses biochimiques de contenus et la question de la fonction de vases gallo-romains communément appelés «biberons»", *Actes du Congrès de la Société Française d'Étude de la Céramique Antique en Gaule, Nyon, 14-17 mai 2015*, Marseille, 561-576.
- Japp, S. Kögler, P. (eds) 2016, *Traditions and Innovations. Tracking the Development of Pottery from the Late Classical to the Early Imperial Periods, Proceedings of the 1st Conference of the International Association for Research on Pottery of the Hellenistic Period, Berlin, 7-10 November 2013 (IARPotHP 1)*, Wien.
- Jayez, M. 2015, "The Shift in Bladelet Production Trajectory from Late Paleolithic to Neolithic: the Case Study of Izeh, Khuzestan, Iran", *Lithic Technology* 40:1, 52-67.
- Jayez, M., Mirzai, K. M., Niknami, K. A. 2019, "Introduction of Late Pleistocene Cultural Material of An Intermediate Region: Palaeolithic Sites of Pion and Izeh Plain Between Central and Southern Zagros, Southwest Iran", *Quaternary International* 512, 52-66.
- Jennings, J. 2010, *Globalizations and the Ancient World*, Cambridge.
- Jennings, J. 2017, "Distinguishing Past Globalizations", T.Hodos(ed.), *The Routledge Handbook of Archaeology and Globalization*, Abingdon, 12-28.
- Johns, C. 2010, *The Hoxne Late Roman Treasure: Gold Jewellery and Silver Plates*, London.
- Jonas, R. 1962, "A Diadem of the Cult of Kybele from the Neapolis Region (Samaria)", *Palestine Exploration Quarterly* 94: 2, 118-128.
- Jones, M. D. 2013, "Key Questions Regarding the Palaeoenvironment of Iran", in D. T. Potts (ed.), *The Oxford Handbook of Ancient Iran*, Oxford, 7-28.
- Jones, M., Djamali, M., Stevens, L., Heyvaert, V., Askari, H., Noorollahi, D., Weeks, L. 2013, "Mid-Holocene Environmental and Climate Change in Iran", in C. A. Petrie (ed.), *Ancient Iran and Its Neighbours. Local Developments and Long-range Interactions in the 4th Millennium BC*, Oxford, 26-35.

- Kakamanoudis, A. 2019, "Aspects of Organisation of Macedonian Cemeteries: from the Archaic to the Hellenistic Times", in H. Frielinghaus, J. Stroszeck, P. Valavanis (eds), *Griechische Nekropolen. Neue Forschungen und Funde*, Möhnesee, 155-174.
- Kalantari, N., Pawar, N. J., Keshavarzi, M. R. 2009, "Water Resource Management in the Intermountain Izeh Plain, Southwest of Iran", *Journal of Mountain Science* 6: 1, 25-41.
- Kambakhsh Fard, S. A. 1968, "Excavation in the temple of Anahita (Kangāvar)", *Barrasihā-ye tāriki* 3: 6, 11-46 (in Persian).
- Kambakhsh Fard, S. A. 1972, "Archaeological Excavation at Kangavar: the temple of Anahita", *Bāstān-šenāsi wa honar-e Irān* 9/10, 2-24 (in Persian).
- Kambakhsh Fard, S. A. 1973, "Kangavār", *Iran* 11, 196-197.
- Kambakhsh Fard, S. A. 1974, "Archaeological Excavation in the temple of Anahita, Kangavar", in *Proceedings of the 2nd Annual Symposium on Archaeological Research in Iran, Tehran, 29th October-1st November 1973*, Tehran, 1-20 (in Persian).
- Kamenjarin, I., Ugarčević, M. (eds) 2020, *Exploring the Neighborhood: The Role of Ceramics in Understanding Place in the Hellenistic World, Proceedings of the 3rd Conference of the International Association for Research on Pottery of the Hellenistic Period, Kaštela, 1-4 June 2017 (IARPotHP 3)*, Wien.
- Karageorghis, V. 2000, *Ancient Art from Cyprus. The Cesnola Collection in The Metropolitan Museum of Art*, New York.
- Kardulias, P. N. 2014, "Archaeology and the Study of Globalization in the Past", *Journal of Globalization Studies* 5: 1, 110-121.
- Katz, D., Oosten V. H. N. 2007, "Sumerian Funerary Rituals in Context", in N. Laneri (ed.), *Performing Death. Social Analyses of Funerary Traditions in the Ancient Near East and Mediterranean*, Chicago, 167-188.
- Kawami, T. S. 1987, *Monumental Art of the Parthian Period in Iran* (Acta Iranica 26), Leiden.
- Keal, E. 1971, "Partho-Sasanian Archaeology: a New Phase", *Expedition. The University Museum of the University of Pennsylvania* 13: 3/4, 55-61.
- Kehl, M. 2009, "Quaternary Climate Change in Iran – The State of Knowledge", *Erdkunde* 63: 1, 1-17.
- Keil, J., Wilhelm, A. (eds), 1931, *Denkmäler aus dem rauhen Kilikien* (Monumenta Asiae Minoris antiqua 3), Manchester.
- Khalili, A., Rahimi, J. 2014, "High-Resolution Spatiotemporal Distribution of Precipitation in Iran: A Comparative Study with Three Global-Precipitation Datasets", *Theoretical and Applied Climatology* 118, 211-221.
- Kharaldina, Z. Y. E., Novichikhin, A. M. 1996, "Ancient Collections of the Anapa Museum", *Ancient Civilizations from Scythia to Siberia* 3: 2-3, 347-365.
- Khosrowzadeh, A. 2010, "Preliminary Results of the 1st Season of Archaeological Survey of Farsan, Bakhtiari Region, Iran", in P. Matthiae, F. Pinnock, L. Nigro, N. Marchetti (eds), *Proceedings of the 6th International Congress of the Archaeology of the Ancient Near East, Università di Roma La Sapienza, 5-10 May 2009*, vol. 2, Wiesbaden, 317-337.
- Kleiss W. 2010, "Kangavar", *Encyclopaedia Iranica* XV: 5, 496-497.
- Klemm, R., Klemm, D. 2008, *Stones and quarries in ancient Egypt*, London.
- Koldewey, R. 1914, *The Excavations at Babylon*, London.
- Körpe, R. 2004, "A New Gold Diadem from Ilgardere", *Studia Troica* 14, 141-145.
- Körpe, R., Treister M. 2002, "Rescue Excavations in the Necropolis of Lampsacus, 1996", *Studia Troica* 12, 429-450.
- Kose, A. 1998, *Uruk. Architektur IV. Von der Seleukiden - bis zur Sasanidenzeit* (Ausgrabungen in Uruk-Warka Endberichte Band 17), Mainz.
- Köster, T. 2012, "Calcite-Alabaster as Grave Goods: Terminology and Sources", in P. Pfälzner, H. Niehr, E. Pernicka, A. Wissing (eds), *(Re-)Constructing Funerary Rituals in the Ancient Near East. Proceedings of the First International Symposium of the Tübingen Post-Graduate School "Symbols of the Dead"*, May 2009 (Qatna Studien Supplementa 1), Wiesbaden, 221-233.
- Kottaridi, A. 2011, *Macedonian Treasures. A Tour through the Museum of the Royal Tombs of Aigai*, Athens.
- Kouremenos, A., Chandrasekaran, S., Rossi, R. (eds) 2011. *From Pella to Gandhara: Hybridisation and Identity in the Art and Architecture of the Hellenistic East* (BAR International Series 2221), Oxford.
- Krug, A. 2005, "209. Aphrodite Anadyomene", in H. Beck (ed.), *Ägypten Griechenland Rom. Abwehr und Berührung*, Tübingen, 626-627.
- Kyriakou, A. 2014, "Exceptional Burials at the Sanctuary of Eukleia at Aegae (Vergina): The Gold Wreath", *The Annual British School at Athens* 109, 251-285.
- LaBianca, O. S., Scham, S. A. 2006, *Connectivity in antiquity: globalization as a long-term historical process*, London.

- Laftsidis, A. 2019, "The Hellenistic *koine* as a linguistic and ceramic concept", *Journal of Greek Archaeology* 4, 204-228.
- Laftsidis, A. 2022, "The Imitation Game: The Continuing Effects of Atticizing in Hellenistic Pottery", in A. Waldner, L. Rembart (eds), *Manufacturers and Markets: The Contribution of Hellenistic Pottery to Economies Large and Small, Proceedings of 4th Conference of the International Association for Research on Pottery of the Hellenistic Period, Athens, 11-14 November, 2019 (IARPotHP 4)*, Wien, 475-494.
- Lambeck, K. 1996, "Shoreline reconstructions for the Persian Gulf since the Last Glacial Maximum", *Earth and Planetary Science Letters* 142, 43-57.
- La Niece, S. 2009, *Gold*, Cambridge (MA).
- Layard, A. H. 1846, "A description of the Province of Khuzestan (Persia)", *Journal of Royal Geographical Society* 16, 1-105.
- Lecomte, O. 1983, "La ceramique du niveau seleuco-parthe de Larsa (1981)" in J. L. Huot (ed.), *Larsa et 'Oueili, Travaux de 1978-81 (ERC-Memoire 26)*, Paris, 306-351.
- Lecomte, O. 1987, "Un probleme d'interpretation: l'E.babbar de Larsa aux epoques hellenistique et seleuco-parthe, approche archeologique, economique et culturelle", in J. L. Huot (ed.), *Larsa 10e campagne (1983) et 'Oueili 4e campagne (1983), Rapport preliminaire (ERC-Memoire 73)*, Paris, 225-246.
- Lecomte, O. 1989, "Fouilles du sommet de l'E.babbar (1985)" in J. L. Huot (ed.), *Larsa, Travaux de 1985, (ERC-Memoire 83)*, Paris, 83-148.
- Lecomte, O. 1993, "Stratigraphical analysis and ceramic assemblages of the 4th -1st centuries B.C. E.babbar of Larsa (Southern Iraq)" in U. Finkbeiner (ed.), *Materialen zur Archäologie der Seleukiden- und Partherzeit im südlichen Babylonien und im Golfgebiet (Ergebnisse der Symposien 1987 und 1989 in Blaubeuren)*, Tübingen, 17-39.
- Lightfoot, C. S. 2017, *The Cesnola Collection of Cypriot Art: Ancient Glass*, New York.
- Lilyquist, C. 1995, *Egyptian Stone Vessels: Khian through Tuthmosis IV (The Metropolitan Museum of Art)*, New York.
- Lindemeyer, E., Martin, L. 1993, *Uruk. Kleinfunde III . Kleinfunde im Vorderasiatischen Museum zu Berlin: Steingefäße und Asphalt, Farbreste, Fritte, Glas, Holz, Knochen/Elfenbein, Muschel/Perlmutter/Schnecke (Endberichte/Ausgrabungen in Uruk-Warka 9)*, Mainz.
- Lindström, G. 2017, "The Portrait of a Hellenistic Ruler in the National Museum of Iran" in J. M. Daehner, K. Lapatin, A. Spinelli (eds), *Artistry in Bronze. The Greeks and Their Legacy. XIXth International Congress on Ancient Bronzes, Los Angeles, 13-17 October 2015*, Los Angeles, 183-189.
- Lindström, G. 2019, "Technology Matters: The Kal-e Chendar Bronze Statuary from the Seleucid to the Parthian Periods" in P. Baas (ed.), *Proceedings of the XXth International Congress on Ancient Bronzes. Resource, Reconstruction, Representation, Role, Tübingen, 17-21 April 2018, (BAR International Series 2958)*, Oxford, 131-141.
- Lindström, G. 2021, "The Portrait of a Hellenistic Ruler and Other Bronze Sculptures from Kal-e Chendar/Shami Results of the 2015 and 2016 studies in the National Museum of Iran", *Journal of Iran National Museum* 2:1, 177-196.
- Lindström, G. 2022, "Kal-e Chendar/Shami, Iran. Ein ungehobener Schatz hellenistischer Plastik aus der Elymais. Die Arbeiten des Jahres 2021", *e-Forschungsberichte des Deutschen Archäologischen Instituts* 2022: 2, 48-58.
- Lischi, S., Pavan, A. 2012, "Le perle di Sumhuran: appunti per una tipologia di vaghi di collana dall'Arabia meridionale", *Egitto e Vicino Oriente* 35, 175-192.
- Littleton, J., Frohlich, B. 2002, "Excavations of the Cemetery – 1996 and 1997", in G. W. Clarke, P. J. Connor, L. Crewe, B. Frohlich, H. Jackson, J. Littleton, C. E. V. Nixon, M. O'Hea, D. Steele (eds), *Jebel Khalid on the Euphrates. Report on Excavations 1986-1996*, Sidney, 101-124.
- Littleton, J., Frohlich, B., Clarke, G. W. 1996-1997, "Preliminary Excavation of the Jebel Khalid Necropolis", *Mediterranean Archaeology* 9/10, 187-205.
- Lloyd, J., Kenrick, P. 2014, "Excavations at Sidi Khrebish, Benghazi, 1971-75: The Small Finds", *Libyan Studies* 45, 97-150.
- Luschej, H. 1939, *Die Phiale*, Bleicherode am Harz.
- Maaskant-Kleibrink, M. 1978, *Catalogue of the Engraved Gems in the Royal Coin Cabinet, The Hague. The Greek, Etruscan and Roman Collections*, Wiesbaden.
- MacDonald, E. M. 2016, "Introduction to Small Finds, Big Implications: The Cultural Meaning of the Littlest Artifacts", *International Journal of Historical Archaeology* 20: 4, 641-644.
- MacFadden, G. H. 1946, "A Tomb of the Necropolis of Ayios Ermoyenis at Kourion", *American Journal of Archaeology* 50: 4, 449-489.
- Mackay, D. 1949, "The Jewellery of Palmyra and Its Significance", *Iraq* 11, 160-187.

- Marcus, M. I. 1994, "Dressed to Kill: Women and Pins in Early Iran", *The Oxford Art Journal* 17: 2, 3-15.
- Marroni, E. 2016, "Parte II – L'immaginario figurato" in E. Marroni, M. Torelli (eds), *l'obolo di Persefone. Immaginario e ritualità dei pinakes di Locri*, Pisa, 23-74.
- Marshall, J. 1951, *Taxila, an illustrated account of archaeological excavations carried out at Taxila under the orders of the Government of India between the years 1913 and 1934*, Cambridge.
- Maryon, H. 1949, "Metal Working in the Ancient World", *American Journal of Archaeology* 53: 2, 93-125.
- Masson, A. 2015, "Stone Vessels", in A. Villing, M. Bergeron, G. Bourogiannis, A. Johnston, F. Leclère, A. Masson, R. Thomas, *Naukratis: Greeks in Egypt*, British Museum Online Research Catalogue.
- Mathiesen, H. E. 1992, *Sculpture in the Parthian Empire. A Study in Chronology*, Aarhus.
- Maxwell-Hyslop, K. R. 1971, *Western Asiatic Jewellery, c.3000-612 BC*, London.
- Mazzoni, S. 2005, "Having and Showing: Women's Possessions in the Afterlife in Iron Age Syria and Mesopotamia" in D. Lyons, R. Westbrook (eds), *Women and Property in Ancient Near Eastern and Mediterranean Societies*, Washington, 1-12.
- Mazzù, M. 2016, "Messina: alcuni *epitymbia* dalla necropoli ellenistica degli Orti della Maddalena", *Studi e ricerche della scuola di specializzazione in beni archeologici di Matera* 16, 109-139.
- McCown, D. E., Haines, R. C., Biggs, R. D. 1978, *Nippur II. The North Temple and Sounding E* (Oriental Institute Publications 97), Chicago.
- Mehr Kian, J. 2006, "The Tisiyun Elymaean Rock Relief of Mehernān, Plain of Susan, Izeh/Mālamir (Khuzestan)", in A. Panaino, A. Piras (eds), *Proceedings of the 5th Conference of the Societas Iranologica Europaea, held in Ravenna, 6-11 October 2003, Vol. I, Ancient and Middle Iranian Studies*, Milano, 611-617.
- Messina, V. 2006, *Seleucia al Tigri. L'Edificio degli Archivi. Lo Scavo e le Fasi Architettoniche* (Monografie di Mesopotamia 8), Firenze.
- Messina, V. 2015, "Gli dei dell'altopiano. Santuari rupestri dell'antica Elimaide", *Atti dell'Accademia delle Scienze di Torino. Classe di Scienze Morali, Storiche e Filologiche* 149, 181-204.
- Messina, V. 2015 (ed.), *Hung-e Azhdar. Research of the Iranian-Italian Joint Expedition in Khuzestan (2008-2011)*, (Archaeological Reports 1), *Parthica* 17, Pisa-Roma.
- Messina, V. 2018, "The Fourth Terrace of Elymais. Preliminary Survey at Qal'e-ye Bardi of the Iranian-Italian Joint Expedition in Khuzestan", *Rivista di Studi Orientali* 91: 1-4, 167-180.
- Messina, V. 2020, "From Susa to Mal-e Mir. Comparison of Settlement Patterns in Elam/Elymais", in B. Genito (ed.), *Living in a Territory. Four Lectures from a Workshop Held in Naples, 16 May 2017, Palazzo Corigliano*, Rome, 87-118.
- Messina, V. 2021, "Beyond Greece and Babylonia. Global and Local at Seleucia on the Tigris", in M. Blömer, S. Riedel, M. J. Versluys, E. Winter (eds), *Common Dwelling Place of all the Gods. Commagene in its Local, Regional and Global Hellenistic Context* (Oriens et Occidens. Studien zu antiken Kulturkontakten und ihrem Nachleben 34), 381-406.
- Messina, V. forthcoming, "The Remote Sacredness of this Land. Landscape and function(s) of the terraced sanctuaries of Elymais", in S. Ponchia, R. Shayegan (eds), *Contextualizing Iranian Religions in the Ancient World. Proceedings of the 14th Melammu Symposium, Los Angeles, 18-20 February 2020*, Los Angeles (CA).
- Messina, V., Mehr Kian, J. 2011, "Ricognizione dei rilievi partici d'Elimaide. La piana di Izeh-Malamir", *Vicino e Medio Oriente* 15, 215-231.
- Messina, V., Mehr Kian, J. 2014, "Return to Shami. Preliminary Survey of the Iranian-Italian Joint Expedition in Khuzistan at Kal-e Chendar", *Iran* 52, 65-77.
- Messina, V., Mehr Kian, J. 2015, "Laser-scanner Survey at Kong-e Yār 'Alivand. Research of the Iranian-Italian Joint Expedition in Kūzestān", *Electrum* 22, 143-154.
- Messina, V., Mehr Kian, J. 2016, "The Religious Complex at Shami. Preliminary Report on the Research of the Iranian-Italian Joint Expedition in Khuzestan at Kal-e Chendar", in R. A. Stucky, O. Kaelin, H.-P. Mathys (eds), *Proceedings of the 9th International Congress on the Archaeology of the Ancient Near East, Basel, June 9-13, 2014, Vol. 3*, Wiesbaden, 439-448.
- Messina, V., Mehr Kian, J. 2018, "Mountainous Sanctuaries of Ancient Elymais. Preliminary Results of the Research Conducted by the Iranian-Italian Joint Expedition in Khuzestan", in S. Gondet, E. Haerinck (eds), *L'Orient est son jardin. Hommage à Rémy Boucharlat*, Leuven-Paris-Bristol, 293-304.
- Messina, V., Mehr Kian, J. 2019a, "Anthrosols detection in the Plain of Izeh", in Y. Moradi (ed.), *Afarin Nameh. Essays on the Archaeology of Iran in Honour of Mehdi Rahbar*, Tehran, 39-48.
- Messina, V., Mehr Kian, J. 2019b, "The Sanctuary and Cemetery of Shami. Research of the Iranian-Italian Joint Expedition in Khuzistan at Kal-e Chendar", in P. B. Lurje (ed.), *Proceedings of the Eight European Conference of Iranian Studies, Saint Petersburg, 14-19 September 2015*, Saint Petersburg, 271-285.
- Michel, C. 2016, "Une économie pionnière", in A. Thomas (ed.) *L'histoire commence en Mesopotamie*, Paris, 58-97.

- Minns, E. H. 1913, *Scythians and Greeks. A Survey of Ancient History and Archaeology on the North Coast of the Euxine from the Danube to the Caucasus*, Cambridge.
- Mirti P., Apollonia, L., Casoli, A. 1999, "Technological Features of Roman Terra Sigillata from Gallic and Italian Centres of Production", *Journal of Archaeological Science* 26, 1427-1435.
- Moorey, P. R. S. 1980a, *Cemeteries of the First Millennium B.C. at Deve Hüyük, near Carchemish, salvaged by T. E. Lawrence and C. L. Woolley in 1913* (BAR International Series 2747), Oxford.
- Moorey, P. R. S. 1980b, "Metal Wine-sets in the Ancient Near East", *Iranica Antiqua* 15, 181-197.
- Moorey, P. R. S. 1994, *Ancient Mesopotamian Materials and Industries. The Archaeological Evidence*, Oxford.
- Moriggi, M. 2011, "An Aramaic Inscription in the Ḥong-e Yār-'Alīwand Rock Relief (Elymais)", *Parthica* 13, 107-109.
- Morizot, Y. 2011, "Sépultures et pratiques funéraires aux époques classique et hellénistique", in S. Descamps-Lequime (ed.), *Au Royaume d'Alexandre le Grand. La Macédoine antique*, Paris, 512-514.
- Muller, A., Tartari, F., Toçi, I. 2004, "Les terres cuites votives du sanctuaire "d'Aphrodite" à Dyrrhachion. Artisanat et piété populaire", in P. Cabanes, J.-L. Lamboley (eds), *L'Illyrie méridionale et l'Épire dans l'Antiquité IV, Actes du IVe colloque international de Grenoble, 10-12 octobre 2002*, Paris, 609-622.
- Muscarella, O. W. 1988, *Bronze and Iron: Ancient Near Eastern Artifacts in the Metropolitan Museum of Art*, New York.
- Musche, B. 1988, *Vorderasiatischer Schmuck zur Zeit der Arsakiden und der Sasaniden* (Handbuch der Orientalistik. Siebente Abteilung. Kunst und Archäologie 1. Bd., 2. Abschnitt B, Lfg. 5), Leiden.
- Myres, J. L. 1914, *Handbook of the Cesnola Collection of Antiquities from Cyprus*, New York.
- Nasseri, H. R., Alijani, F., Mirzaei, L. 2009, "Environmental Characterization of a Karst Polje: An Example from Izeh Polje, Southwest Iran", *Environmental Earth Sciences* 59: 1, 99-108.
- Naumann, F. 1983, *Die Ikonographie der Kybele in der Phrygischen und der griechischen Kunst*, Tübingen.
- Negro Ponzi, M. M. 1968-69, "Sasanian Glassware from Tell Mahuz (North Mesopotamia)", *Mesopotamia* III-IV, 293-384.
- Negro Ponzi, M. M. 1970-71, "Jewellery and Small Objects from Tell Mahuz", *Mesopotamia* V-VI, 391-425.
- Negro Ponzi, M. M. 1972, "The Excavation in the Agorà (s.c. Porticoed Street)", *Mesopotamia* VII, 17-25.
- Negro Ponzi, M. M. 2002, "The Glassware from Seleucia (Central Iraq)", *Parthica* 4, 63-156.
- Niknami, K. A., Jayez, M. 2012, *Stone Age Archaeology of Izeh Plain, Kuzistan, Iran*, Saarbrücken.
- Niknami, K. A., Jayez, M., Salahshour, N. A. 2009, "New Epipalaeolithic-Protoneolithic Sites on the Izeh Plain, South-Western Iran", *Antiquity. Project Gallery* 83: 321.
- Nodelman, S. A. 1960, "A Preliminary History of Characene", *Berytus* 13, 83-121.
- Nöldeke, T. 1874, "Griechische Namen Susiana's", *Nachrichten von der Königlichen Gesellschaft der Wissenschaften und der Georg-August Universität zu Göttingen* 8, 173-197.
- Nováková, L. 2012, "Burial Places Outside the Sanctuary: Centre of Religious Life", *Anodos: Studies of The Ancient World* 12, 193-204.
- Nováková, L. 2016, "Symbolic figures in Early Imperial Asia Minor. Reshaping of funerary architecture?", *ILIRIA International Review* 6: 2, 99-115.
- Nunn, A. 1988, *Die Wandmalerei und der glasierte wand-schmuck im Alten orient*, Leiden-Köln.
- Oates, D. 1968, *Studies in the Ancient History of Northern Iraq*, London.
- Oates, D., Oates, J. 2001, *Nimrud. An Assyrian Imperial City Revealed*, London.
- Oikonomou, S. 2004, "Nekriká kosmémata. Ta elásmata kalypsís tou stómatos", *Eulimeni* 5, 91-133.
- Ornan, T. 2002, "The Queen in Public: Royal Women in Neo-Assyrian Art", in S. Parpola e R. M. Whiting (eds), *Sex and Gender in the Ancient Near East. Proceedings of the XLVIIe Rencontre Assyriologique Internationale, Helsinki, July 2-6, 2001*, Helsinki, 474-477.
- Orton, C., Hughes, M. 2013, *Pottery in Archaeology*, London.
- Oudbashi, O., Emami, S. M., Davami, P. 2012, "Bronze in Archaeology: A Review of the Archaeometallurgy of Bronze in Ancient Iran" in L. Collini (ed.), *Copper Alloys: Early Applications and Current Performance. Enhancing Processes*, Rijeka, 153-178.
- Ovadiah, A., Mucznik, S. 2011, "The Roman Sarcophagi at Kedesh, Upper Galilee: Iconography, Typology and Significance", *Liber Annuus* 61, 531-554.
- Pabot, H. 1964, "Phytogeographical and ecological regions", in M. L. Dewan, J. Famouri (eds), *The Soils of Iran*, FAO, Roma.
- Pace, A. 2019, *Immagini di Gela. Le necropoli e il profilo culturale della polis tardo-arcaica. I materiali della collezione e del predio Lauricella*, Sesto Fiorentino.
- Papachatzis, N. 1958, "I Pasikrata tis Demetriadas", *Thessalika* 1, 50-65.
- Parcak, S. 2009, *Satellite Remote Sensing for Archaeology*, London-New York.
- Parrot, A. 1966, "André Godard (1881-1965)", *Syria* 43, 157-158.

- Pedde, F. 1993, "Frehat en-Nufegi: Two Seleucid Tumuli near Uruk", in A. Invernizzi, J.-F. Salles (eds), *Arabia Antiqua. Hellenistic Centres around Arabia* (Serie Orientale Roma 70/2), Roma, 205-221.
- Pedde, F. 1995, "Seleukidische und Parthische Zeit", in R. M. Boehmer, F. Pedde, B. Salje (eds), *Uruk. Die Gräber* (Ausgrabungen in Uruk-Warka. Endberichte 10) Mainz, 140-199.
- Peignard-Giros, A. (ed.) 2019, "Daily Life in a Cosmopolitan World: Pottery and Culture during the Hellenistic Period", in *Proceedings of the 2nd Conference of the International Association for Research on Pottery of the Hellenistic Period, Lyon, 5-8 November 2015* (IARPotHP 2), Wien.
- Peker, M. 2015, "İzmir İli Nif Dağı Kazısı Buluntusu Altın Diademler. Gold Diadems from the Nif Mountain Excavations, İzmir", *Mediterranean Journal of Humanities* 5: 2, 307-312.
- Pestle, W. J. 1999, *The Graves of Seleucia-on-the-Tigris*, (Dissertation University of Michigan).
- Peters, J. P. 1898, *Nippur, or Explorations and Adventures on The Euphrates. The Narrative of the University of Pennsylvania Expedition to Babylonia in the Years 1888-1890*, New York-London.
- Petrie, C. A. 2002, "Seleucid Uruk: An Analysis of Ceramic Distribution", *Iraq* 64, 85-123.
- Petrie, C. A., Asgari Chaverdi, A., Seyedin, M. 2006, "Excavations at Tol-e Spid", in D. T. Potts, K. Roustaei (eds), *The Mamasani Archaeological Project, Stage One: A report on the first two seasons of the ICAR - University of Sydney expedition to the Mamasani District, Fars Province, Iran*, Tehran, 89-134.
- Petrie, C. A., Djamali, M., Jones, M. D. 2018, "Physical Geography and Environment of Elam", in J. Álvarez-Mon, G. P. Basello, Y. Wicks (eds), *The Elamite World*, London-New York, 99-117.
- Pfrommer, M. 2005, "Medaillon mit Isis und Sarapis", in H. Beck (ed.), *Ägypten Gricenland Rom. Abwehr und Berührung*, Tübingen, 688-689.
- Piccarreta, F. 1987, *Manuale di fotografia aerea: uso archeologico*, Roma.
- Piccarreta, F., Ceraudo, G. 2000, *Manuale di Aerofotografia archeologica*, Bari.
- Pieterse, J. N. 1995, "Globalization as Hybridization", in M. Featherstone, S. Lash, R. Robertson (eds), *Global Modernities*, London, 45-68.
- Pieterse, J. N. 2012, "Periodizing Globalization: Histories of Globalization", *New Global Studies* 6: 2, 1-25.
- Pirzio Biroli Stefanelli, L. 1991a, *L'argento dei romani: vasellame da tavola e d'apparato*, Roma.
- Pirzio Biroli Stefanelli, L. 1991b, *L'oro dei romani: gioielli di età imperiale*, Roma.
- Pitts, M., Versluys, M. J. (eds) 2015, *Globalisation and the Roman World. World History, Connectivity and Material Culture*, New York.
- Pollak, L. 1903, *Klassisch-antike Goldschmiedearbeiten im Besitze Sr. Excellenz A. J. Von Nelidow*, Leipzig.
- Pollock, S. 2008, "Feast, Funerals and Fast Foods in Early Mesopotamian State", in T. L. Bray (ed.), *The Archaeology and Politics of Food and Feasting in Early States and Empires*, 17-38.
- Pomadere, M. 2007, "Des enfants nourris au biberon à l'Âge du Bronze ?", in C. Mee, J. Renard (eds), *Cooking up the Past. Food and Culinary Practices in the Neolithic and Bronze Age Aegean*, Oxford, 270-289.
- Potts, D. T. 2006, "Disposal of the Dead in Planquadrat U/V XVIII at Uruk: A Parthian Enigma?", *Baghdader Mitteilungen* 37, 267-278.
- Potts, D. T. 2014, *Nomadism in Iran. From Antiquity to the Modern Era*, Oxford-New York.
- Potts, D. T. 2016, *The Archaeology of Elam. Formation and Transformation of an Ancient Iranian State*, New York.
- Potts, D. T. 2019, "The Elymaean *bratus*: A Contribution to the Phytohistory of Arsacid Iran", in Y. Moradi (ed.), *Afarin Nameh. Essays on the Archaeology of Iran in Honour of Mehdi Rahbar*, Tehran, 31-38.
- Potts, D. T., Roustaei, K., Weeks, L. R., Petrie, C. A. 2006, "The Mamasani District and the Archaeology of Southwestern Iran", in D. T. Potts, K. Roustaei (eds), *The Mamasani Archaeological Project, Stage One: A report on the first two seasons of the ICAR - University of Sydney expedition to the Mamasani District, Fars Province, Iran*, Tehran, 1-16.
- Puschnigg, G. 2008, "Hellenistic Echoes in Parthian Merv: Transformation and Adaptation in the Ceramic Repertoire", *Parthica* 10, 109-128.
- Puschnigg, G. 2019, "East and West: Some Remarks on Intersections in the Ceramic Repertoires of Central Asia and Western Iran", in Y. Moradi (ed.), *Afarin Nameh, Essays on the Archaeology of Iran in Honour of Mehdi Rahbar*, Tehran, 157-164.
- Quast, D. 2014, "Goldener Sepulkral schmuck der Römerzeit aus Tartūs / Antarados (Syr)", in Römisch-Germanisches Zentralmuseum (ed.), *Honesta missione. Festschrift für Barbara Pferdehirt* (Monographien des Römisch-Germanischen Zentralmuseums 100), Mainz, 265-310.
- Raat, A. 2013, *Diadems: A Girl's best Friend? Jewellery Finds and Sculptural Representations of Jewellery from Rome and Palmyra in the First Two Centuries AD*, (Dissertation Leiden University).
- Rahbar, M. 1999, "Shushtar. Les tombeaux d'époque parthe de Gelâlak", *Dossiers d'Archéologie* 243, 90-93.

- Rahbar, M. 2007, "A Tower of Silence of the Sasanian Period at Bandiyan: Some Observations about Dakhmas in Zoroastrian Religion", in J. Cribb, G. Herrmann, *After Alexander. Central Asia before Islam*, Oxford, 455-473.
- Rahbar, M. 2016, "Caucasia Top-Down: Remote Sensing Data for Survey in a High-Altitude Mountain Landscape", *Quaternary International* 402, 46-60.
- Rahbar, M., Sajjad, A., Haerinck, E., Overlaet, B. 2014, "In Search of the Laodikea temple at Laodikea Media/Nahavand, Iran", *Iranica Antiqua* 49, 301-329.
- Rawlinson, H. C. 1839, "Notes on a March from Zoháb, at the Foot of Zagros, along the Mountains of Khúzistán (Susiana), and from to Kirmanshah, in the Year 1836", *Journal of the Royal Geographical Society* 9, 26-116.
- Reeves, L. C. 2003, *Aegean and Anatolian Bronze Age Metal Vessels: A Social Perspective*, (Dissertation University of London).
- Reinhold, S., Belinskiy, A., Korobov, D. 2016, "Caucasia top-down: Remote Sensing data for Survey in a High-Altitude Mountain Landscape", *Quaternary International* 402, 46-60.
- Rhomiopoulou, K. 2011, "Les tombes "macédoniennes"" in S. Descamps-Lequime (ed.), *Au Royaume d'Alexandre le Grand. La Macédoine antique*, 514-515.
- Rice, P. M. 1987, *Pottery Analysis. A Sourcebook*, Chicago - London.
- Richter, G. M. A. 1969, *A Handbook of Greek Art*, London - New York.
- Riha, E., Stern, W. B. 1982, *Die römischen Löffel aus Augst und Kaiseraugst: archäologische und metallanalytische Untersuchungen (Forschungen in Augst 5)*, Augst.
- Robert, L. 1936, "Études d'Épigraphie Grecque", *Revue de Philologie* 10, 113-170.
- Robertson, R. 1994, "Globalisation or glocalisation?", *Journal of International Communication* 1: 1, 33-52.
- Ronchetta, D. 2018, *L'architettura funeraria di Hierapolis di Frigia. Le tombe A della necropoli nord*, Torino.
- Rotroff, S. I. 1997, *Hellenistic Pottery: Athenian and Imported Wheelmade Tableware and Related Material (The Athenian Agora XXIX)*, Princeton.
- Rotroff, S. I. 2006, *Hellenistic Pottery: The Plain Wares (The Athenian Agora XXXIII)*, Princeton.
- Rostovtzeff, M. 1941, *The Social and Economic History of the Hellenistic World*, Oxford.
- Roustaei, K., Azadi, A. 2011, "Discovery of a Parthian Tomb Chamber in Cheram, Kohgiluyeh, SW Iran", *Iranica Antiqua* 46, 193-206.
- Rutten, K. 1996, "Late Achaemenid and Hellenistic Pottery from the Tombs of Mahmudiyah, Abu Qubur and Tell ed-Der", *Northern Akkad Project Reports* 10, 7-39.
- Saglio, E. 1887, s. v. "cochlear or cochleare" in Ch. Daremberg, E. Saglio (eds), *Dictionnaire des antiquités grecques et Romaines d'après les textes et les monuments I : 2*, Paris, 1266.
- Salaris, D. 2017, *The Kingdom of Elymais (ca. 301 BC-224 AD). A Comprehensive Analysis (Archaeological, Artistic, and Textual) of One of the Most Important Minor Reigns in Southern Iran*, (Dissertation Macquarie University).
- Salaris, D. 2023, "The Elymaean Temple of Bard-e Neshandeh: A New Interpretation", in J. Tavernier, E. Gorris, K. De Graef (eds), *Susa and Elam II. History, Language, Religion and Culture (Mémoires de la Délégation en Perse 59)*, Leiden, 209-255.
- Salaris, D., Basello, G. P. 2019, "ὄρεινὰ καὶ ληιστρικὰ ἔθνη (Strabo XVI.1.17): Mountain tribes of Elymais and State Powers, from Neo-Elamite Kingdom(s) to Alexander the Great", in L. Prandi (ed.), *EstOvest. Confini e conflitti fra Vicino Oriente e mondo Greco-Romano*, Roma, 79-115.
- Sardari Zarchi A., Soltani, A., Attarpour, S. 2014, "Expansion of Elymais culture in the Foothills: Masjed-e Soleiman and Andika", *Bastanpazhuhi (Persian Journal of Iranian Studies - Archaeology)* 8: 16, 64-81 (in Persian).
- Sarkosh Curtis, V. 1993, "A Parthian Statuette from Susa and the Bronze Statue from Shami", *Iran* 31, 63-69.
- Sarkhosh Curtis, V. Pazooki, N. 2004, "Aurel Stein and Bahman Karimi on Old Routes of Western Iran", in H. Wang (ed.), *Sir Aurel Stein. Proceedings of the British Museum Study Day, 23 March 2002 (The British Museum Occasional Paper 142)*, London, 23-28.
- Sarnataro, T. 2010/2011, *Privata Luxuria all'ombra del Vesuvio. Le argenterie vesuviane: problemi di iconografia, cronologia, botteghe* (Dissertation Università degli Studi di Napoli Federico II).
- Sartre, A. 1989, "Architecture funéraire de la Syrie", in Dentzer J.-M., Orthmann, W. (eds), *Archéologie et Histoire de la Syrie II. La Syrie de l'époque achéménide à l'avènement de l'Islam*, 423-446.
- Sartre-Fauriat, A. 2001, *Des tombeaux et des morts. Monuments funéraires, société et culture en Syrie du sud du Ier s. av J.-C. au VIIe S. apr. J.-C.*, Beirut.
- Scatozza Höricht, L. A. 2010, "Kyme di Eolide e l'oro di Dioniso. Nuovo diadema della necropoli", *Archäologischer Anzeiger* 1, 105-121.

- Scatozza Höricht, L. A. 2014, "L'oro di Mida e Kyme eolica", in M. Tortorelli Ghidini (ed.), *Aurum. Funzioni e simbologie dell'oro nelle culture del Mediterraneo antico*, Roma, 117-126.
- Schippmann, K. 1970, "Notizien zu einer Reise in den Bachtiaribergen", *Archaeologische Mitteilungen aus Iran* 3, 231-237.
- Schippmann, K. 1971, *Die iranischen Feuerheiligtümer*, Berlin - New York.
- Schmidt, S. 2005, "30 Serapis – ein neuer Gott für die Griechen in Ägypten (Kat. 182-187)", in H. Beck (ed.), *Ägypten Griechenland Rom. Abwehr und Berührung*, Tübingen, 291-309.
- Sciacca, F. 2005, *Patere baccellate in bronzo. Oriente, Grecia, Italia in età orientalizzante*, Roma.
- Scigliuzzo, E. 2004, "Ivory Hand Bowls", *Egitto e Vicino Oriente* 27, 109-120.
- Searight, A., Reade, J., Finkel, I. 2008, *Assyrian Stone Vessels and Related Material in the British Museum*, Oxford.
- Sevinç, N., Treister, M. 2003, "Metalwork from the Dardanos Tumulus", *Studia Troica* 13, 215-260.
- Seyrig, H. 1952, "Antiquités syriennes. 53. Antiquités de la nécropole d'Émèse (1^{re} partie)", *Syria* 29 : 3-4, 204-250.
- Seyrig, H. 1953, "Antiquités syriennes. 53 (suite). Antiquités de la nécropole d'Émèse", *Syria* 30 : 1-2, 12-50.
- Sgourou, M., Agelarakis A. P. 2001, "Jewellery from Thasian Graves", *The Annual of the British School at Athens* 96, 347-364.
- Shenkar, M. 2014, *Intangible Spirits and Graven Images: The Iconography of Deities in the Pre-Islamic Iranian World (Magical and Religious Literature of Late Antiquity 4)*, Leiden.
- Sherratt, S. 2003, "The Mediterranean economy: 'Globalization' at the end of the second millennium B.C.E.", in W. G. Dever, S. Gitin (eds), *Symbiosis, symbolism, and the power of the past: Canaan, ancient Israel, and their neighbors from the Late Bronze Age through Roman Palaestina*, Winona Lake (IN), 37-62.
- Sherwin-White, S. M. 1984, "Shami, the Seleucids and Dynastic Cult: A Note", *Iran* 22, 160-161.
- Simpson, St J. 2005, "The Royal Table", in J. Curtis, N. Tallis (eds), *Forgotten Empire: The world of ancient Persia*, London, 104-111.
- Siroux, M. 1938, "Masdjid-e Sulaiman", *Athar-e Iran* 3, 157-160.
- Smith, C. H. 1896, *Catalogue of the Greek and Etruscan Vases in the British Museum* 2, London.
- Sofia, G. 2019, "Primi dati sugli Epitymbia nelle Necropoli "Monumentali" di Messana ed Abakainon", *Archeologia Classica* 70: 9, 109-140.
- Soltysiak, A. 2013, "Report on Selected Human Remains from Lama, Southern Zagros, Iran", *Iranica Antiqua* 48, 77-101.
- Sparkes, B. A., Talcott, L. 1970, *Black and Plain Pottery of the 6th, 5th and 4th Centuries B.C. (The Athenian Agora XII)*, Princeton.
- Sparks, R. T. 2007, *Stone vessels in the Levant (The Palestine Exploration Fund Annual VIII)*, Leeds.
- Squitieri, A. 2017, *Stone Vessels in the Near East during the Iron Age and the Persian Period (c. 1200-330 BCE)*, (Archaeopress Ancient Near East Archaeology 2), Oxford.
- Squitieri, A., Eitam, D. (eds) 2019 *Stone tools in the Ancient Near East and Egypt. Ground stone tools, rock-cut installations and stone vessels from Prehistory to Late Antiquity*, Oxford.
- Stamatopoulou, M. 2014, "The Pasikrata Sanctuary at Demetrias and the alleged funerary sanctuaries of Thessaly. A re-appraisal", *Kernos* 27, 207-255.
- Starr, R. F. S. 1939, *Nuzi. Report on the Excavations at Yorgan Tapa near Kirkuk, Iraq, Conducted by Harvard University in Conjunction with the American Schools of Oriental Research and the University Museum of Philadelphia 1927-1931*, Cambridge.
- Stein, A. 1938, "An Archaeological Journey in Western Iran", *The Geographical Journal* 92: 4, 313-342.
- Stein, A. 1940, *Old Routes of Western Īrān. Narrative of an Archaeological Journey carried out and recorded*, London.
- Stern, E. M., Schlick Nolte, B. 1994, *Early Glass of the Ancient world, 1600 B.C. - A.D. 50*, Ostfildern.
- Stevens, L. R., Ito, E., Schwalb, A., Wright Jr., H. E. 2006, "Timing of Atmospheric Precipitation in the Zagros Mountains Inferred from a Multi-Proxy Record from Lake Mirabad, Iran", *Quaternary Research* 66, 494-500.
- Stewart, S. 2013, "Connections near and far: Hellenistic imported pottery at Phrygian Gordion", in N. Fenn and C. Römer-Strehl (eds) *Networks in the Hellenistic World: According to the pottery in the Eastern Mediterranean and beyond* (BAR International Series 2539), Oxford, 181-192.
- Stockhammer P. W. 2012, "Conceptualizing Cultural Hybridization in Archaeology", P. W. Stockhammer (ed.), *Conceptualizing Cultural Hybridization: A Transdisciplinary Approach*, Berlin - Heidelberg, 43-58.
- Strommenger, E. 1967, *Gefässe aus Uruk von der neubabylonischen Zeit bis zu den Sasaniden* (Ausgrabungen der Deutschen Forschungsgemeinschaft in Uruk-Warka 7), Berlin.

- Stronach, D. 1978, *Pasargadae: A Report on the Excavations Conducted by the British Institute of Persian Studies from 1961 to 1963*, Oxford.
- Stronach, D. 1995, "The Imagery of the Wine Bowl: Wine in Assyria in the Early First millennium B.C.", in P. E. McGovern, S. J. Fleming, S. H. Katz (eds), *The Origins and Ancient History of Wine*, New York, 175-195.
- Šul'z, P. 1953, *Mavzoléi Neapolya Skífskogo*, Moscow.
- Swift, E. 2014, "Design, function and use-wear in spoons: reconstructing everyday Roman social practice", *Journal of Roman Archaeology* 27, 203-237.
- Tallon, F. (ed.) 1995, *Les pierres précieuses de l'Orient ancien des Sumériens aux Sassanides*, Paris.
- Tanabe, K. (ed.) 1986, *Sculptures of Palmyra* (Memoirs of the Ancient Orient Museum 1), Tokyo.
- Theodossiev, N. 1998, "The Dead with Golden Faces: Dasaretian, Pelagonian, Mygdonian and Boeotian Funeral Masks", *Oxford Journal of Archaeology* 17: 3, 345-367.
- Theodossiev, N. 2000, "The Dead with Golden Faces. II Other Evidence and Connections", *Oxford Journal of Archaeology* 19: 2, 175-209.
- Thompson, D. B. 1993, *An Ancient Shopping Center: the Athenian Agora* (Excavations of the Athenian Agora. Picture Books 12), Princeton.
- Tite, M. S., Freestone, I. C., Meeks, N. D., Bimson, M. 1982, "The Use of Scanning Electron Microscopy in the Technological Examination of Ancient Pottery", in J. Olin, A. Franklin (eds), *Archaeological ceramics*, 109-120.
- Toll, N. P. 1943, *The Excavations at Dura-Europos. Final Report IV. Part I: The Green Glazed Pottery*, New Haven.
- Toll, N. P. 1946, "The Necropolis", in M. I. Rostovtzeff, A. R. Bellinger, F. E. Brown, C. B. Welles (eds), *The Excavations at Dura-Europos. Preliminary Report of the Ninth Season of Work 1935-1936*, London.
- Tran Tam Tinh, V. 1983, *Sérapis debout. Corpus des monuments de Sérapis debout et étude iconographique*, Leiden.
- Treister, M. Y. 2001, *Hammering Techniques in Greek and Roman Jewellery and Toreutics* (Colloquia Pontica 8), Leiden.
- Trendall, A. D., Cambitoglou A. 1978, *The red-figured vases of Apulia*, Oxford.
- Tullio, A. 1990, "Epitymbia ellenistici in Sicilia", in *Akten des XIII. Internationalen Kongresses für Klassische Archäologie, Berlin, 24-30 Juli 1988*, Berlin, 429-430.
- Turnbow, H. N. 2012, "Roman sarcophagi", in C. Ratté, P. D. De Staebler (eds), *Aphrodisias V: The Aphrodisias Regional Survey*, Darmstadt, 309-346.
- Tzouvara-Souli, Ch. 1979, *E látreaia tòn gunaikeiòn theotètòn eis ten archaiaian Epeiron*, Ioannina.
- Uhlenbrock, J. P. 1988, *The terracotta protomai from Gela: A discussion of local style in Archaic Sicily* (Studia Archaeologica 50), Roma.
- U'mran Musah, M. 1979, "Excavations at the Eastern Tell", *Sumer* 41, 67-70.
- Vahdati Nasab, H. 2011, "Paleolithic Archaeology of Iran", *International Journal of Humanities* 18: 2, 63-87.
- Valtz, E. 1984, "Pottery from Seleucia on the Tigris", in R. Boucharlat, J.-F. Salles (eds), *Arabie Orientale, Mesopotamie et Iran meridional de l'age du Fer au debout de la periode islamique* (ERC - Memoire 37), Paris, 41-48.
- Valtz, E. 1988, "Trench on the East Side of the Archives Square. Seleucia, 13th Season", *Mesopotamia* XXIII, 19-29.
- Valtz, E. 1991, "New Observations on the Hellenistic Pottery from Seleucia on the Tigris", in K. Schippmann, A. Herling, J.-F. Salles (eds), *Golf-Archäologie: Mesopotamien, Iran, Kuwait, Bahrain, Vereinigte Arabische Emirate und Oman* (Internationale Archäologie 6), Buch am Erlbach, 45-56.
- Valtz, E. 1993, "Pottery and Exchanges: Imports and Local Production at Seleucia-Tigris", in A. Invernizzi, J.-F. Salles (eds), *Arabia Antiqua. Hellenistic Centres around Arabia* (Serie Orientale 70: 2), Rome, 167-182.
- Valtz, E. 2000, "Cosmetic Containers from Seleucia on the Tigris", *Munstersche Beitrage z. antiken Handelsgeschichte* 19, 59-69.
- Valtz, E. 2002, "Ceramica invetriata: caratteristiche ed evoluzione della produzione di Seleucia ad Tigrim", in F. Blondé, P. Ballet, J.-F. Salles (eds), *Ceramiques hellenistiques et romaines. Productions et diffusion en Mediterranee orientale: Chypre, Egypte et cote syro-palestinienne. Actes du colloque tenu à la Maison de l'Orient Mediterranéen Jean Pouilloux, 2-4 mars 2000* (Travaux de la Maison de l'Orient méditerranéen 35), Lyon, 331-337.
- van As, A., Jacobs, L. 2014, "The Babylonian Potter. Environment, Clay and Techniques", in H. Gasche, J. A. Armstrong (eds), *Mesopotamian Pottery. A Guide to the Babylonian Tradition in the Second Millennium BC* (Series II Memoirs VI. University of Ghent), 75-93.
- Vanden Berghe, L. 1984, *Reliefs rupestres de l'Iran ancien*, Bruxelles.

- van't Haaff, P. A. 2007, *Catalogue of Elymaean Coinage ca. 147 BC - AD 228*, Lancaster-London.
- Vanden Berghe, L., Schippmann, K. 1985, *Les reliefs rupestres d'Elymaïde (Irān) de l'époque parthe* (Iranica antiqua Supplément 3), Gent.
- van Zeist, W. 1967, "Late Quaternary Vegetation History of Western Iran", *Review of Palaeobotany and Palynology* 2, 30-311.
- van Zeist, W. 2008a, "Outline of the Vegetation of Western Iran", in K. Wasylikowa, A., Witkowski (eds), *The Palaeoecology of Lake Zeribar and Surrounding Areas, Western Iran, during the Last 48.000 years*, Ruggell, 23-30.
- van Zeist, W. 2008b, "Late Pleistocene and Holocene Vegetation at Zeribar", in K. Wasylikowa, A. Witkowski (eds), *The Palaeoecology of Lake Zeribar and Surrounding Areas, Western Iran, during the Last 48.000 years*, Ruggell, 53-104.
- van Zeist, W., Bottema, S. 1977, "Palynological Investigations in Western Iran", *Palaeohistoria* 19, 19-95.
- van Zeist, W., Bottema, S. 1991, *Late Quaternary Vegetation of the Near East*, Wiesbaden.
- Venco Ricciardi, R. 1967, "Pottery from Coche", *Mesopotamia* II, 93-104.
- Versluys, M. J. 2016, "Un biglietto di sola andata dall'Egitto a Roma?" in F. Poole (ed.), *Il Nilo a Pompei. Visioni d'Egitto nel Mondo Romano*, Modena, 57-61.
- Vitezović, S. 2013, "Personal Ornaments in the Vinča Culture: The Case Study of Vitkovo and Stragari" in I. V. Ferencz, N. C. Rîșcuta, O. T. Bărbat (eds), *Archaeological Small Finds and Their Significance. Costume as an Identity Expression. Proceedings of the Symposium of the Museum of Dacian and Roman Civilisation, Deva I, Deva*, 9-20.
- Vollenweider M.-L. 1984, *Deliciae Leonis. Antike geschnittene Steine und Ringe au seiner Privatsammlung*, Mainz.
- von Bissing, F. W. 1939, "Studien zur ältesten Kultur Italiens IV: Alabastra", *Studi Etruschi* 13, 131-178.
- von Bissing, F. W. 1940, "Die Alabastra der hellenistischen und römischen Zeit", *Studi Etruschi* 14, 99-146.
- von Bissing, F. W. 1942, "Ägyptische und ägyptisierende Alabastergefäße aus den Deutschen Ausgrabungen zu Babylon", *Zeitschrift für Assyriologie* 47, 27-49.
- Walton, M. S., Doehne, E., Trentelman, K., Chiari, G., Maish, J., Buxbaum, A. 2009, "Characterization of Coral Red Slips on Greek Attic pottery", *Archaeometry* 51: 3, 383-396
- Walstra, J., Verkinderen, P., Heyvaert, V. M. A. 2010, "Reconstructing Landscape Evolution in the Lower Khuzestan Plain (SW Iran): Integrating Imagery, Historical and Sedimentary Archives", in D. C. Cowley, L. A. Standring, M. J. Abicht (eds), *Landscapes through the Lens. Aerial Photographs and Historical Environment*, Oxford - Oakville, 111-128.
- Wang, H. 2002, *Sir Aurel Stein in The Times. A collection of over 100 references to Sir Aurel Stein and his extraordinary expeditions to Chinese Central Asia, India, Iran, Iraq and Jordan in The Times newspaper 1901-1943*, London.
- Watelin, L. C., Langdon, S. 1934, *Excavations at Kish. IV, 1925-1930* (Oxford Field Museum Expedition 3), Paris.
- Weeks, L. R., Alizadeh, K. S., Niakan, L., Alamdari, K., Khosrowzadeh, A., Zeidi, M. 2006, "Excavations at Tol-e Nurabad", in D. T. Potts, K. Roustaei (eds), *The Mamasani Archaeological Project, Stage One: A report on the first two seasons of the ICAR - University of Sydney expedition to the Mamasani District, Fars Province, Iran*, Tehran, 31-88.
- Westh-Hansen, S. M. 2011, "Cultural Interaction and the Emergence of Hybrids in the Material Culture of Hellenistic Mesopotamia: An Interpretation of Terracotta Figurines, Ceramic Ware and Seal Impressions", in A. Kouremenos, S. Chandrasekaran, R. Rossi (eds), *From Pella to Gandhara: Hybridisation and Identity in the Art and Architecture of the Hellenistic East* (BAR International Series 2221), Oxford, 103-116.
- Wheatley, D., Gillings, M. 2002, *Spatial Technology and Archaeology. The Archaeological Applications of GIS*, New York.
- Whitcomb, D. S. 1985, *Before the Roses and Nightingales: Excavations at Qasr-i Abu Nasr, Old Shiraz*, New-York.
- White, R. 1991, *The middle ground: Indians, Empires and Republics in the Great Lakes region: 1650-1815* (Cambridge studies in North American Indian history), Cambridge.
- Whittaker, H. 2006, "Religious Symbolism and the Use of Gold in Burial Contexts in the Late Middle Helladic and Early Mycenaean Periods", *Studi Micenei ed Egeo-Anatolici* 48, 283-289.
- Wilkinson, T. J. 1993, "Linear Hollows in the Jazira, Upper Mesopotamia", *Antiquity* 67, 548-562.
- Wilkinson, T. J. 2003, *Archaeological Landscapes of the Near East*, Tucson.
- Williams, D., Ogden, J. 1994, *Greek Gold. Jewelry of the Classical World*, London.

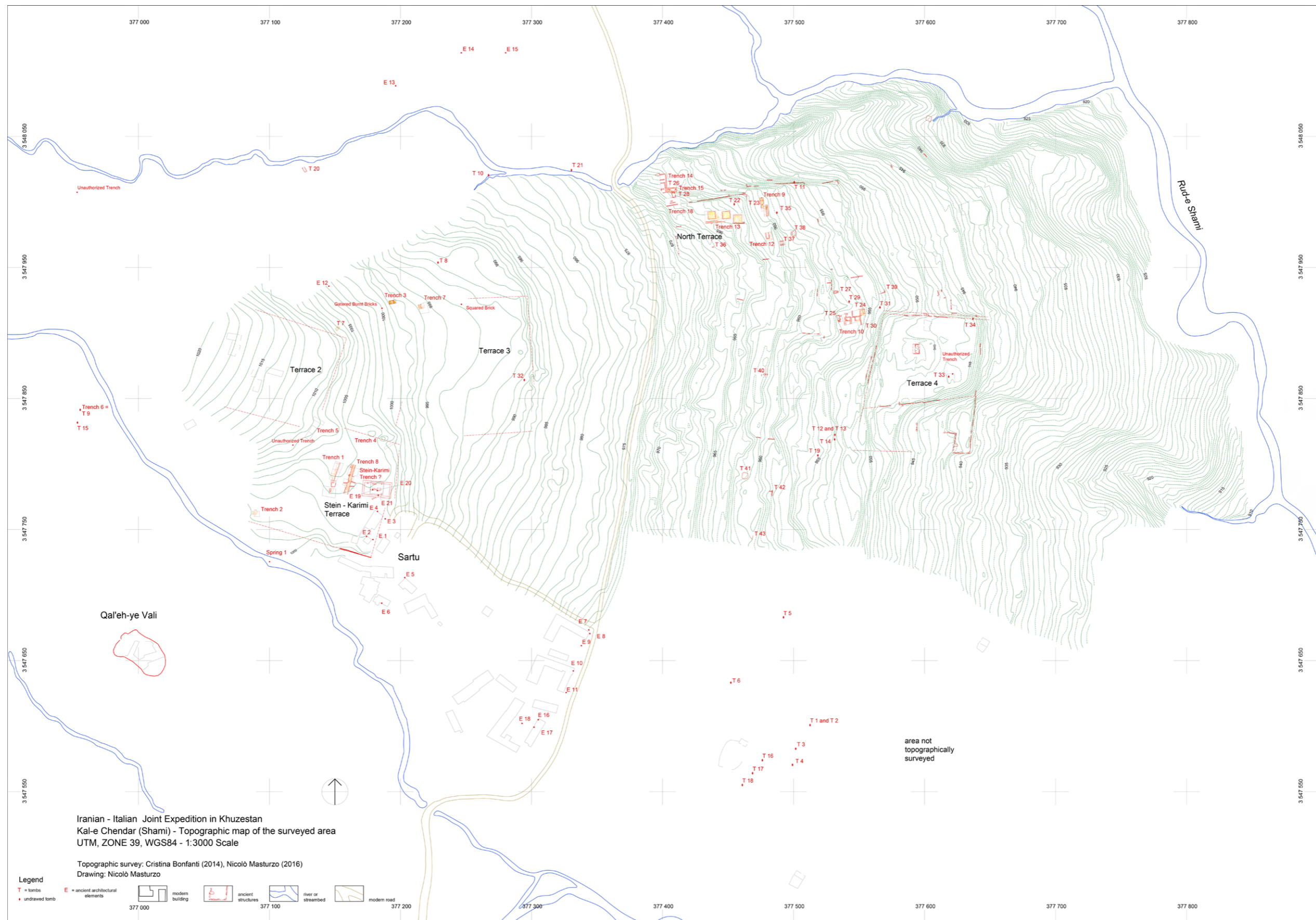
- Williams, D., Tatton-Brown, V.A., Walker, S. E. C. 1991, "A Lady from Miletopolis", *Jewellery Studies* 5, 77-83.
- Wilson, D. R. 2000, *Air Photo Interpretation for Archaeologists*, Stroud.
- Winter, I. J. 1999, "Reading Rituals in the Archaeological Record: Deposition Pattern and Function of two Artifacts Types from the Royal Cemetery of Ur", in H. Kühne, H. J. Nissen (eds), *Fluchtpunkt Uruk: Archäologische Einheit aus methodischen Vielfalt*, Leidorf, 229-256.
- Winter, I. J. 2003, "Ornament and the "Rhetoric of Abundance" in Assyria", *Eretz-Israel: Archaeological, Historical and Geographical Studies* 27, 252-264.
- Woolley, L. 1934, *The Royal Cemetery. A Report on the Predynastic and Sargonid Graves Excavated between 1927 and 1931* (Ur Excavations II), London.
- Woolley, L. 1962, *The Neo-Babylonian and Persian Periods* (Ur Excavations IX), London.
- Wright, G. R. H. 2011, "An Unusual Parthian Grave Form in its Context", *Archiv für Orientforschung* 52, 186-198.
- Wright, H. T. (ed) 1979, *Archaeological Investigations in Northeastern Xuzestan, 1976*, Ann Arbor.
- Wright, H. T., Kossary, Y. 1979, "Archaeological Survey on the Dašt-e Gol, February 1975", in H. T. Wright (ed.), *Archaeological Investigations in Northeastern Xuzestan, 1976*, Ann Arbor, 1-18.
- Wright, H. T., Yaghma'i, I. 1979, "Archaeological Survey in the Vicinity of Iveh, January 1976", in H. T. Wright, (ed.), *Archaeological Investigations in Northeastern Xuzestan, 1976*, Ann Arbor, 19-32.
- Wygnańska, Z. 2014, "Tracing the 'Diadem Wearers'. An Inquiry into the Meaning of Simple-Form Head Adornments from the Chalcolithic and Early Bronze Age in The Near East", in A. Golani, Z. Wygnańska (eds), *Beyond ornamentation. Jewelry as an Aspect of Material Culture in the Ancient Near East* (Polish Archaeology in the Mediterranean 23: 2), Warsaw, 85-144.
- Yeivin, S. 1933, "The Tombs found at Seleucia. Season 1929-1930, 1931-1932", in L. Waterman (ed.), *Second Preliminary Report upon the Excavations at Tel Umar, Iraq conducted by the University of Michigan, the Toledo Museum of Art and the Cleveland Museum of Art*, Ann Arbor, 33-64.
- Zagarell, A. 1982, "The First Millennium in the Bakhtiari Mountains", *Archäologische Mitteilungen aus Iran* 15, 31-52.
- Zimi, E. 1997, "Spoons in the Greek World" in O. Palagia (ed.), *Greek Offerings. Essays on Greek Art in honour of John Boardman* (Oxbow Monographs 89), Oxford, 209-220.
- Zohari, M. 1963, *On the Geobotanical Structure of Iran* (Bulletin of the Research Council of Israel 11), Jerusalem.

Digital sources

British Museum. <https://www.britishmuseum.org/collection>

Centro Ricerche Archeologiche e Scavi di Torino per il Medio Oriente e l'Asia.
<https://www.centroscavitorino.it>

The Metropolitan Museum of Art. <https://www.metmuseum.org/art/collection>



Iranian - Italian Joint Expedition in Khuzestan
 Kal-e Chendar (Shami) - Topographic map of the surveyed area
 UTM, ZONE 39, WGS84 - 1:3000 Scale

Topographic survey: Cristina Bonfanti (2014), Nicolò Masturzo (2016)
 Drawing: Nicolò Masturzo

- Legend**
- T = tombs
 - undrawn tomb
 - E = ancient architectural elements
 - modern building
 - ancient structures
 - river or streambed
 - modern road

