



McDONALD INSTITUTE MONOGRAPHS

# Temple landscapes

## Fragility, change and resilience of Holocene environments in the Maltese Islands

By Charles French, Chris O. Hunt, Reuben Grima,  
Rowan McLaughlin, Simon Stoddart & Caroline Malone



Volume 1 of Fragility and Sustainability – Studies on Early Malta,  
the ERC-funded *FRAGSUS Project*

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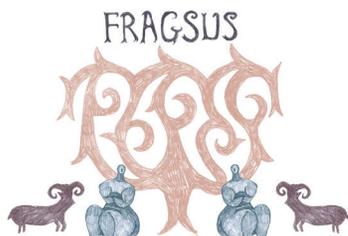
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Rowan McLaughlin, Simon Stoddart & Caroline Malone

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On the cover: *View towards Nadur lighthouse and Ghajnsielem church with the Gozo Channel to Malta beyond, from In-Nuffara (Caroline Malone).*

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## Preface and dedication

Caroline Malone

The *FRAGSUS Project* emerged as the direct result of an invitation to undertake new archaeological fieldwork in Malta in 1985. Anthony Bonanno of the University of Malta organized a conference on 'The Mother Goddess of the Mediterranean' in which Colin Renfrew was a participant. The discussions that resulted prompted an invitation that made its way to David Trump (Tutor in Continuing Education, Cambridge University), Caroline Malone (then Curator of the Avebury Keiller Museum) and Simon Stoddart (then a post-graduate researcher in Cambridge). We eagerly took up the invitation to devise a new collaborative, scientifically based programme of research on prehistoric Malta.

What resulted was the original Cambridge Gozo Project (1987–94) and the excavations of the Xagħra Brochtorff Circle and the Ġhajnsielem Road Neolithic house. Both those sites had been found by local antiquarian, Joseph Attard-Tabone, a long-established figure in the island for his work on conservation and site identification.

As this and the two other volumes in this series report, the original Cambridge Gozo Project was the germ of a rich and fruitful academic collaboration that has had international impact, and has influenced successive generations of young archaeologists in Malta and beyond.

As the Principal Investigator of the *FRAGSUS Project*, on behalf of the very extensive *FRAGSUS* team I want to dedicate this the first volume of the series to the enlightened scholars who set up this now 35 year-long collaboration of prehistoric inquiry with our heartfelt thanks for their role in our studies.

We dedicate this volume to:

Joseph Attard Tabone  
Professor Anthony Bonanno  
Professor Lord Colin Renfrew

and offer our profound thanks for their continuing role in promoting the prehistory of Malta.



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## Acknowledgements

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For Chapter 2, we extend warm thanks to the staff of the <sup>14</sup>CHRONO centre at QUB, especially Stephen Hoper, Jim McDonald, Michelle Thompson and Ron Reimer, all of whom took a keen interest in the *FRAGSUS Project*. The success of the *FRAGSUS Project* in general and the radiocarbon dating exercise has depended on their work. We thank the Physical Geography Laboratory staff at the School of Geography, University College Dublin, for the use of their ITRAX XRF core scanner. In particular, we would like to thank Dr Steve McCarron, Department of Geography, National University of Ireland, Maynooth and Dr Jonathan Turner, Department of Geography, National University of Ireland, University College, Dublin. We thank Prof. Patrick Schembri for sourcing and collecting the *Acanthocardia* samples from the Natural Museum of Natural History. Sean Pyne O'Donnell thanks Dr Chris Hayward at the Tephrochronology Analytical Unit (TAU), University of Edinburgh, for help and advice during microprobe work. Dr Maxine Anastasi, Department of Classics and Archaeology, University of Malta, helped identify the pottery from the settlement cores. Dr Frank Carroll helped show us the way forward; but sadly is no longer with us. Chris Hunt, Rory Flood, Michell Farrell, Sean Pyne O'Donnell and Mevrick Spiteri were the coring team.

They were helped by Vincent Van Walt, who provided technical assistance. Al Ruffell and John Meneely did geophysical evaluation and GRP location of the cores. During fieldwork, Tim Kinnaird and Charles French were assisted by Sean Taylor, Jeremy Bennett and Simon Stoddart. We are grateful to the Superintendence of Cultural Heritage, Malta and Heritage Malta for permission to undertake the analyses and much practical assistance.

For Chapter 5, we would like to thank all at Heritage Malta, the Ġgantija visitor's centre and the University of Malta for their friendly and useful assistance throughout. In particular, we would like to thank George Azzopardi, Daphne Caruana, Josef Caruana, Nathaniel Cutajar, Chris Gemmell, Reuben Grima, Joanne Mallia, Christian Mifsud, Anthony Pace, Ella Samut-Tagliaferro, Mevrick Spiteri, Katya Stroud, Sharon Sultana and Nick Vella. We also thank Tonko Rajkovača of the McBurney Laboratory, Department of Archaeology, University of Cambridge, for making the thin section slides, the Physical Geography Laboratory, Department of Geography, University of Cambridge, and the ALS Global laboratory in Seville, Spain, for processing the multi-element analyses.

For Chapter 6, Reuben Grima wrote the first draft of this contribution, receiving comments and additions from the other authors.

For Chapter 7, Simon Stoddart wrote the first draft of this contribution, receiving comments and additions from the other authors.

For Chapter 9, we thank Sharlo Camilleri for providing us with a copy of the GIS data produced by the MALSIS (MALtese Soil Information System) project. We are grateful to Prof. Saviour Formosa and Prof. Timmy Gambin, both of the University of Malta, who facilitated the donation of LiDAR data, together with computer facilities, as part of the European project ERDF156 *Developing National Environmental Monitoring Infrastructure and Capacity*, from the former Malta

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Simon Stoddart would like to thank Prof. Martin Jones and Rachel Ballantyne for their advice in constructing Figure 11.4. The editors would like to thank Emma Hannah for compiling the index.

Firstly, the FRAGSUS Project is the result of a very generous research grant from the European Research Council (Advanced Grant no' 323727), without which this and its two partner volumes and the research undertaken could not have taken place. We heartily thank the ERC for its award and the many administrators in Brussels who monitored our use of

the grant. The research team also wants to record our indebtedness to the administrators of the grant within our own institutions, since this work required detailed and dedicated attention. In particular we thank Rory Jordan in the Research Support Office, Stephen Hoper and Jim McDonald – CHRONO lab, and Martin Stroud (Queen's University Belfast), Laura Cousens (Cambridge University), Glen Farrugia and Cora Magri (University of Malta), the Curatorial, Finance and Designs & Exhibitions Departments in Heritage Malta and Stephen Borg at the Superintendence of Cultural Heritage. Finally, we thank Fr. Joe Inguanez (Emeritus Head of Department, Department of Sociology, University of Malta) for offering us the *leitmotif* of this volume while a visiting scholar in Magdalene College, Cambridge: '*Mingħajr art u ħamrija, m'hemmx sinjorija*' translating as 'without land and soil, there is no wealth'.

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# Foreword

Anthony Pace

Sustainability, as applied in archaeological research and heritage management, provides a useful perspective for understanding the past as well as the modern conditions of archaeological sites themselves. As often happens in archaeological thought, the idea of sustainability was borrowed from other areas of concern, particularly from the modern construct of development and its bearing on the environment and resource exploitation. The term sustainability entered common usage as a result of the unstoppable surge in resource exploitation, economic development, demographic growth and the human impacts on the environment that has gripped the World since 1500. Irrespective of scale and technology, most human activity of an economic nature has not spared resources from impacts, transformations or loss irrespective of historical and geographic contexts. Theories of sustainability may provide new narratives on the archaeology of Malta and Gozo, but they are equally important and of central relevance to contemporary issues of cultural heritage conservation and care. Though the archaeological resources of the Maltese islands can throw light on the past, one has to recognize that such resources are limited, finite and non-renewable. The sense of urgency with which these resources have to be identified, listed, studied, archived and valued is akin to that same urgency with which objects of value and all fragile forms of natural and cultural resources require constant stewardship and protection. The idea of sustainability therefore, follows a common thread across millennia.

It is all the more reason why cultural resource management requires particular attention through research, valorization and protection. The *FRAGSUS Project* (Fragility and sustainability in small island environments: adaptation, cultural change and collapse in prehistory) was intended to further explore and enhance existing knowledge on the prehistory of Malta and Gozo. The objective of the project as

designed by the participating institutional partners and scholars, was to explore untapped field resources and archived archaeological material from a number of sites and their landscape to answer questions that could be approached with new techniques and methods. The results of the *FRAGSUS Project* will serve to advance our knowledge of certain areas of Maltese prehistory and to better contextualize the archipelago's importance as a model for understanding island archaeology in the central Mediterranean. The work that has been invested in *FRAGSUS* lays the foundation for future research.

Malta and Gozo are among the Mediterranean islands whose prehistoric archaeology has been intensely studied over a number of decades. This factor is important, yet more needs to be done in the field of Maltese archaeology and its valorization. Research is not the preserve of academic specialists. It serves to enhance not only what we know about the Maltese islands, but more importantly, why the archipelago's cultural landscape and its contents deserve care and protection especially at a time of extensive construction development. Strict rules and guidelines established by the Superintendence of Cultural Heritage have meant that during the last two decades more archaeological sites and deposits have been protected in situ or rescue-excavated through a statutory watching regime. This supervision has been applied successfully in a wide range of sites located in urban areas, rural locations and the landscape, as well as at the World Heritage Sites of Valletta, Ġgantija, Ғaġar Qim and Mnajdra and Tarxien. This activity has been instrumental in understanding ancient and historical land use, and the making of the Maltese historic centres and landscape.

Though the cumulative effect of archaeological research is being felt more strongly, new areas of interest still need to be addressed. Most pressing are those areas of landscape studies which often become

peripheral to the attention that is garnered by prominent megalithic monuments. *FRAGSUS* has once again confirmed that there is a great deal of value in studying field systems, terraces and geological settings which, after all, were the material media in which modern Malta and Gozo ultimately developed. There is, therefore, an interplay in the use of the term sustainability, an interplay between what we can learn from the way ancient communities tested and used the very same island landscape which we occupy today, and the manner in which this landscape is treated in contested economic realities. If we are to seek factors of sustainability in the past, we must first protect its relics and study them using the best available methods in our times. On the other hand, the study of the past using the materiality of ancient peoples requires strong research agendas and thoughtful stewardship. The *FRAGSUS Project* has shown us how even small fragile deposits, nursed through protective legislation and guardianship, can yield significant information which the methods of pioneering scholars of Maltese archaeology would not have enabled access to. As already outlined by the Superintendence of Cultural Heritage, a national research agenda for cultural heritage and the humanities is a desideratum. Such a framework, reflected in the institutional partnership of the

*FRAGSUS Project*, will bear valuable results that will only advance Malta's interests especially in today's world of instant e-knowledge that was not available on such a global scale a mere two decades ago.

*FRAGSUS* also underlines the relevance of studying the achievements and predicaments of past societies to understand certain, though not all, aspects of present environmental challenges. The twentieth century saw unprecedented environmental changes as a result of modern political-economic constructs. Admittedly, twentieth century developments cannot be equated with those of antiquity in terms of demography, technology, food production and consumption or the use of natural resources including the uptake of land. However, there are certain aspects, such as climate change, changing sea levels, significant environmental degradation, soil erosion, the exploitation and abandonment of land resources, the building and maintenance of field terraces, the rate and scale of human demographic growth, movement of peoples, access to scarce resources, which to a certain extent reflect impacts that seem to recur in time, irrespectively of scale and historic context.

Anthony Pace  
Superintendent of Cultural Heritage (2003–18).

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## Chapter 7

### Cultural landscapes from 2000 BC onwards

Simon Stoddart, Anthony Pace, Nathaniel Cutajar,  
Nicholas C. Vella, Rowan McLaughlin, Caroline Malone,  
John Meneely & David Trump†

#### 7.1. An historiographical introduction to the Neolithic–Bronze Age transition into the Middle Bronze Age

The transition from the Neolithic to the Bronze Age has always been a focus of considerable debate (Bonanno 1993a & b; Stoddart 1999, 141) (see Volume 2, Chapter 10), ever since the transition was recognized, most prominently by Zammit in Tarxien temple. Early debate dwelt on substantial changes in material culture and rites of death, and emphasized the abandonment silts of the Tarxien temple detected by Zammit (1930, 45–7; Evans 1971, 149–51). These data, interpreted in a cultural historical framework, suggested that not only was there radical change in the population, but a substantial period of abandonment (Trump 1961a & b, 303; Evans 1971, 224). As more stratigraphies began to be investigated at Skorba, Xagħra Brochtorff Circle and Tas-Silġ in the second half of the twentieth century, distinct relationships between the two succeeding societies were suggested, as outlined in the previous Chapter 6. What is becoming clearer is that the so-called Bronze Age transition emerged in the final centuries of the third millennium BC, evolved, albeit in punctuated and uneven steps through to its demise at the start of the first millennium BC and lasted a remarkable 1200 years or so. It remains a complex and still poorly understood episode of distinctive ceramics, monuments and landscapes that deserves better understanding and chronological refinement, through fresh problem oriented fieldwork similar to the *FRAGSUS Project*.

One approach has been to detect transitional modes and combinations of material culture in the major monuments that have been excavated. Both Evans (1971, 180 & 1984, 496) and Trump (1976–7) began to suggest the presence of intermediate forms of pottery or layers which contained material of both phases. This approach has particularly been developed

by Italian scholars working at Tas-Silġ (Cazzella & Recchia 2012, 28–32; Copat *et al.* 2013, 49–51) who have interpreted many forms of ceramic continuity between the two phases. Cazzella and Recchia (2015) have taken this further by identifying a distinct Thermi ceramic phase between the Late Neolithic Tarxien and the Early Bronze Age Tarxien Cemetery. This has allowed them to identify distinct contexts, such as a hollow altar at Tarxien and even the depiction of boats on an upright Globigerina Limestone slab at Tarxien, as belonging to this intermediate phase that they have identified (Cazzella & Recchia 2015, 144). As described in the previous chapter and in Volume 2, the results of the *FRAGSUS Project* broadly agree with this interpretation, but stress that Thermi ware is found in the latest Tarxien layers and thus is the final stage of Temple use, not the beginning of the Bronze Age.

Another approach has been to investigate the transition in the realm of the living (that is settlements) rather than of death and ritual. One major break-through here has been the Gozo survey, the first systematic survey to record the ceramic transition from the end of the Neolithic into the Early Bronze Age, as imprinted on the rural landscape rather than on a few selected monuments. A complementary break-through has been the activity of the Superintendence in response to the enormous development activity over the last thirty years. This work is complementary since it has been most intensive in its effect on the long standing and continuing urban centres of the island, most notably the citadels of Gozo and Mdina and their surrounds on their respective islands of Gozo and Malta. The combination of these two vital activities has given us a solid understanding of the changing processes of centralization and dispersal which became critical at the onset of the early second millennium BC and continued into later periods.

The study of the physical landscape had been dominated by the investigation of ‘cart-ruts.’ These

features in the landscape have fascinated scholars from a very early period of research (Fenton 1918) and have often been dated to the Bronze Age, although deeply intractable in terms both date and explanation. The probable *longue durée* process of creation (apparently repeated abrasion of the rock along pairs of lines) is one reason why a simple date is difficult. Their creation, which has been placed as early as the Neolithic by Zammit (1928; 1930), has the highest academic consensus in the Bronze Age (Magro Conti & Saliba 2007), but many others place them as late as the Roman and medieval periods (e.g. Fenton 1918). Causation may also be made more complex by this long stretch of time over which they were probably created, since equifinality may be an important factor. However, the regular pairing of the ruts does make wheeled transport the most likely cause. Some suggestions, such as lazy bed field systems (Sagona 2004), drawn from the ethnography of distant, temperate Europe, seem deeply improbable. The study of the physical landscape has been developed in a different way by the *FRAGSUS Project* as already discussed in the previous two chapters. Subsequent ubiquitous soil erosion from at least the early Neolithic period as clearly demonstrated in the *FRAGSUS* results described in Chapters 2, 5 and 8, coupled with long-term arable cropping in Chapter 3, is the more probable cause of the deepening and exposure of the ruts (cf. Mottershead *et al.* 2010; 2017).

A related issue is that of the development of terraces on the Maltese islands (Bennett 2020) (see Chapter 8). In spite of their much greater importance for life and heritage on Maltese islands than cart ruts, their chronology has received very much less attention. A number of Neolithic temples set within terraced forecourts show that the technological capacity was present by the second cycle of agricultural intensification on the Maltese Islands. When constructed they could even have been conceived as enclosures for the horticulture around the clubhouse temples (Barratt *et al.* 2020). However, this ‘terrace’ construction appears to have been very limited, even if the presence of *Theligionum* (Djamali *et al.* 2013) has been considered as a proxy for terrace construction at this early date (see Chapter 3). It is more probable that terraces were first systematically constructed during the Bronze Age, but there is so far no direct evidence of their construction during this phase. The mid-first millennium BC has a much stronger case since this is when the landscape was substantially tamed for tree crops (as discussed below). Dating remains a severe problem, since the discovery of datable pottery is a rare occurrence, but the use of OSL dating practised by the *FRAGSUS Project* (see Chapters 4 & 8) is clearly the way forward, since the sediments within the terraces can be

directly dated by this technique. However, so far the dates so far achieved from this technique have only corroborated the dates provided by the *Cabreo* land tenure documents (Alberti *et al.* 2018) (see Chapter 9).

A further theme of great importance is the degree of connectivity. Early work was focused on distinctive artefacts such as bossed bone plaques and copper axes. More recent work has investigated the discovery of Maltese pottery outside the islands (Bernabo Brea 1966; Tusa 1983, 307; Raneri *et al.* 2015). It has now been established that imported Maltese pottery has been found at eleven sites on Sicily and Sicilian pottery, imitated Maltese pottery at two Sicilian sites (Ognina and Matrensa) and Sicilian material on three sites in Malta during the Middle Bronze Age (In-Nuffara, Borg in-Nadur and Tas-Silġ). The connectivity also extended beyond pottery to the very uses of the pottery itself since the same ‘Maltese ritual vessel set, composed of a two-handled bowl, an open-mouthed jug, and a pedestalled basin, existed and was used in religious and funerary rituals in Malta and in Sicily’ (Tanasi & Vella 2015; Tanasi 2011a, 304 & 2013, 13). All this evidence shows that the maritime landscape had become traversable in a way not achieved in earlier periods. Tanasi (2008) has interpreted Malta as a small Sicily lost in the Mediterranean, but nevertheless connected to Mycenae through small ports of trade such as Borg in-Nadur. The presence of fish in some deposits (Tanasi 2013) also suggests a greater exploitation of this part of the landscape compared with preceding periods.

The most recent approach has been the direct application of absolute chronology. In this respect, the *FRAGSUS Project* has had a major impact, even though the main focus of the project was on the preceding period. The current consensus by the project team is of a more gradual transition from the Neolithic as has also been covered in the previous chapter, notably with an important effect of dating levels with Thermi pottery, whilst still allowing for a gap before the early Bronze Age.

All these elements build up into a range of explanations of the change that took place between the two social organizations, represented by the Late Neolithic and Early Bronze Age. Earlier explanations were more cataclysmic. Later explanations have been more ideological (Bonanno 1993a; Bonanno *et al.* 1990) and gradualistic. Though seemingly marking a clear departure from long established customs such as collective inhumation, or the construction of extensive megalithic buildings, the Early Maltese Bronze Age still reflected a preoccupation with megaliths, which was, in fact, deeply rooted. Besides the re-utilization of older megalithic centres (Zammit 1930; Azzopardi 2007, 9–17) the smaller and less conspicuous ‘dolmen’

made an appearance at this time in several locations across the archipelago (Pace 1995, 57). The evidence is accumulating that the intentionality of the change was as much internally as externally driven. The original discovery of the Bronze Age cremation cemetery within the Tarxien temple was originally interpreted by Zammit as separated by a period of abandonment and silting. This same deposit can be reinterpreted as a deliberate preparatory surface for the insertion of the cremation burials in a limited area of the temple, a performative act (Evans 1971, 149; Bonanno 1993b, 37). The same level of intentionality can be detected in the closure of activity at the Xagħra Brochtorff Circle. A medium-sized standing skirted figure was deliberately smashed (Malone *et al.* 2009a, 283–98) while smaller significant liturgical artefacts were deliberately inverted in the final deposit within the heart of the ritual monument in the period 2450–2350 BC. Similar arguments have been applied to the large standing skirted statue found at Tas-Silġ which may have been deliberately slighted at the moment of transition and transformation of the site (Vella 1999). In the subsequent Bronze Age, in the early centuries of the second millennium BC, significant intact ceramic containers were placed around the edges of the depression formed by the collapsed main cave structure at the Xagħra Brochtorff Circle. The depressions were then in-filled with artefact-rich domestic deposits, an action which might be interpreted as deliberate manuring of the site with rich agricultural materials. Judging from diagnostic ceramic fragments examined by John Evans (Evans 1971) many of the other major monuments of the Neolithic, such as Skorba and Borġ in-Nadur, appear also to have attracted attention and were occupied leaving rich domestic deposits and structures.

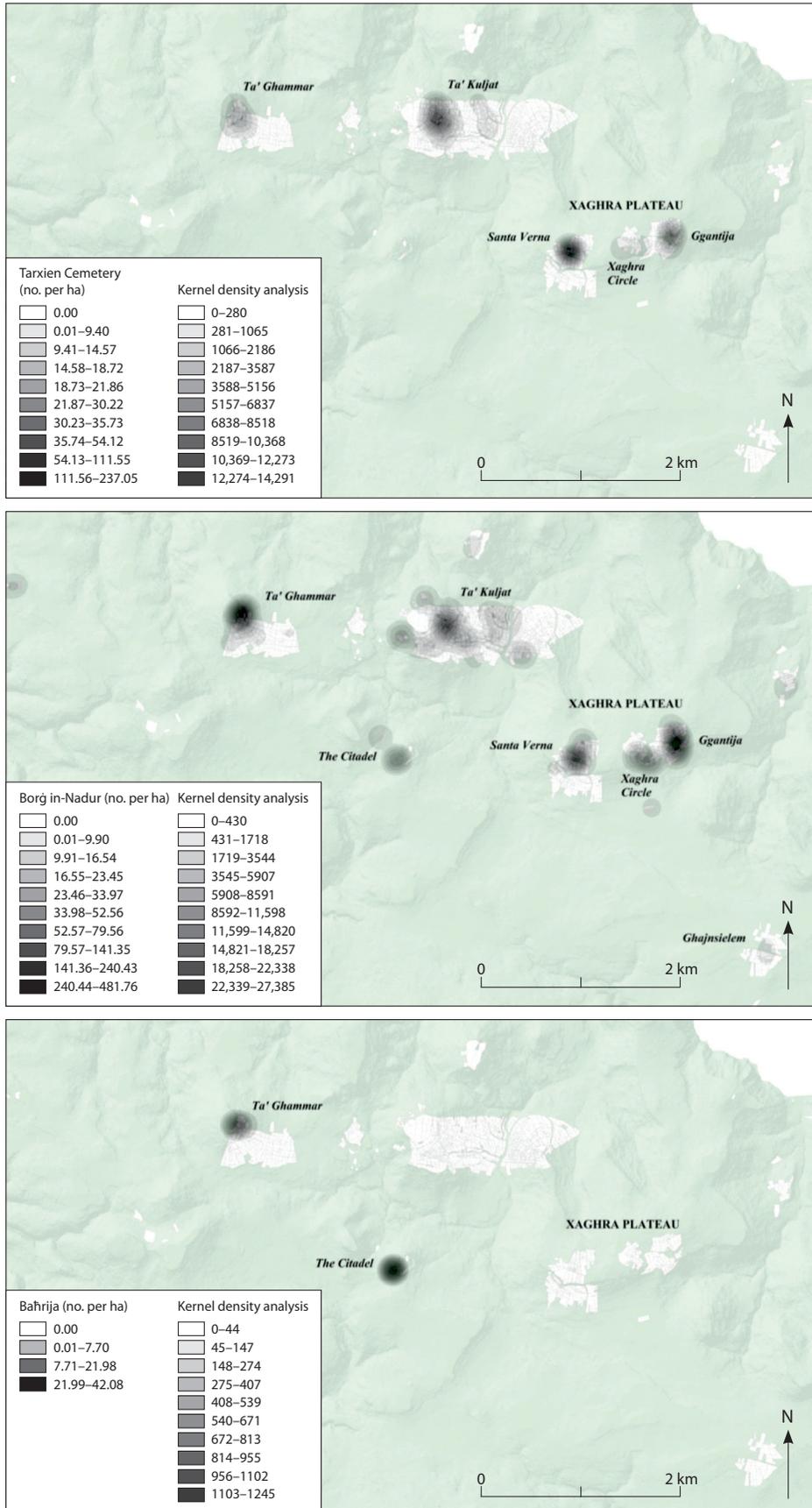
## 7.2. Bronze Age settlements in the landscape

The study of the full Bronze Age (Borġ in-Nadur and Baħrija phases) has been dominated by the study of a few defended sites and indeed this observation endures. However, as in central Italy where the same process occurred, we have to be very careful that the sampling strategy has not reinforced the evidence. The most important pair of these defended sites are Borġ in-Nadur and Baħrija themselves. The first was first explored by Murray (1923–9), more recently by Trump (2002) and extensively restudied by Tanasi and Vella (2011a & b, 2015). The second was first studied by Peet (1910), more recently by Trump (2010) and surveyed by Maria Elena Zammit (2006). During the *FRAGSUS Project*, a pair of late Bronze Age silos were excavated on another defended site of In-Nuffara on Gozo and are reported in Volume 2, once again building on the work

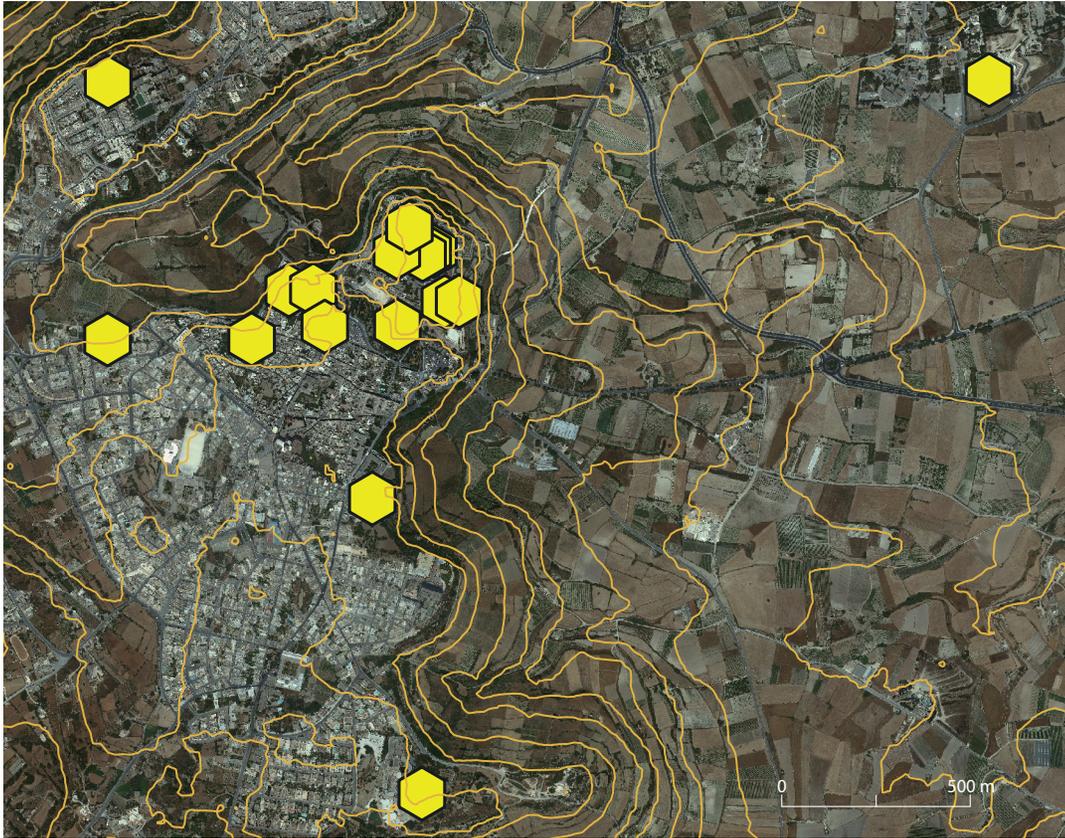
of David Trump and Joseph Attard Tabone (Trump 1962). A digital surface survey was also undertaken in 2014 of the entire hilltop, giving a broader spatial setting to the occupation of the mesa in the Bronze Age, by recording visible silos and other emerging floors. This work is covered in the companion Volume 2.

Complementing this focus on individual sites, the 1987–95 Cambridge Gozo survey provides the first detailed evidence of the cyclicity these developments in the course of the Bronze Age (Fig. 7.1), as well as a preliminary check on the influence of targeted research on the collection of evidence. As already indicated in the previous chapter, settlement occupation expanded from the ‘temple’ areas of the Xagħra plateau during the Tarxien Cemetery period to include other mesa tops (Ta’ Kuljat and Ta’ Għammar). During the Borġ in-Nadur phase, settlement distribution (measured by pottery density) expanded considerably to include spreads beyond the immediate defended areas, suggesting that Borġ in-Nadur settlement had a demographic expansion which led to the expansion of occupation to the undefended flanks of some mesas, notably Ta’ Kuljat. It is likewise notable that the Xagħra Brochtorff Circle, Santa Verna and Ġgantija were also intensively occupied at this time. Finally, though the citadel of Gozo seems to have been used during the Tarxien Late Neolithic phase, it was then re-occupied during the Borġ in-Nadur phase, as was the area below in the square near St. George (as shown by David Trump). During Borġ in-Nadur 29 domestic sites were found on Gozo, including 18 hotspots found during the survey (Boyle 2013). The Cambridge Gozo survey has, therefore, registered a pattern more complex than that detected by the targeted research of earlier generations. The final Baħrija phase of the Bronze entailed a considerable retraction of settlement into just two locations: Ta’ Għammar and the Citadel which became the focal point of settlement activity from this moment onwards on Gozo.

In parallel to the Cambridge Gozo survey, the Superintendence of Cultural Heritage has been engaged in (largely) urban rescue excavation over the course of the last twenty-five years. This has uncovered a similar pattern for the Borġ in-Nadur period. On Malta (Fig. 7.2a), the defended position of Mdina (2005, 2008) was encircled by other Middle Bronze Age deposits found at Mtarfa (1995), Ta’ Sawra (Rabat) (2012), Triq San Pawl (Rabat) (2012), Doni Street (Rabat) (2012) and Gherixem (Rabat) (2013). On Gozo (Fig. 7.2b), further evidence of the intensity of occupation of the citadel was uncovered in the form of distinctive rock-cut silos. This evidence, particularly that from Mdina, has thus revolutionized our understanding of the Middle Bronze Age occupation of the islands, revealing a process of nucleation



**Figure 7.1.** Kernel density analysis of the Tarxien Cemetery, Borġ in-Nadur and Bahrija periods for the areas covered by the Cambridge Gozo survey (S. Boyle).



**Figure 7.2a** (above). The evidence for Bronze Age settlement in the Mdina area on Malta (data from records from the Superintendence archives) (R. McLaughlin).



**Figure 7.2b** (left). The evidence for Bronze Age settlement in the Rabat (Gozo) area (data from records from Superintendence archives) (R. McLaughlin).

that started in the Early Bronze Age and intensified in the Final Bronze Age, serving as a precursor of the Phoenician and Punic urban centre.

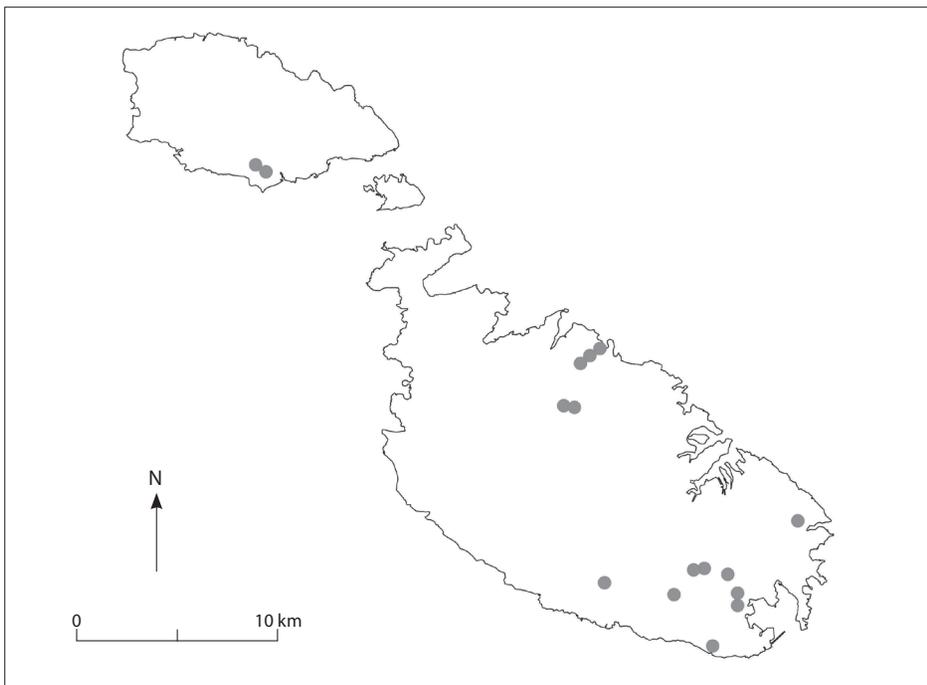
A further dimension of Bronze Age activity is that of the funerary landscape. In the Early Bronze Age, dolmens seem to have been placed along the ‘margins of major topographic features such as on Ta’ Ċenċ on Gozo, including deep side wadis, plateaus and plains’ (Tanasi & Vella 2011a, 414), but these relatively fragile monuments, currently some 17 in number (Evans 1956; Sciberras 1999; Pásztor & Roslund 1997) have never been effectively surveyed and are often too poorly preserved to determine their orientation (Fig. 7.3). Another dimension of the funerary landscape, probably of the Middle Bronze Age is occupation within caves around the Maltese Islands. The cave of Għar Mirdum, a discovery by speleologists, has been ably contextualized by Tanasi (2014), within the limits of the recorded evidence, and substantially dated to the Borġ in-Nadur phase. It is located within 2.5 km of the defended Bronze Age site of Wardija ta’ San Gorg on the Dingli cliffs and appears to have had many functions ranging from burial (two inhumations) to associated ritual. The finds included substantial quantities of pottery, animal bone, some fish bone and egg shell, a bone tool, a bone handle, quartz blades, pebbles, one imported basalt quern, one local *Globigerina* Limestone grindstone and hammer. Significantly, there was also a faience bead and bronze material, including a dagger blade, an ingot fragment and two rivets. Notably some of these elements point to the new levels of connectivity

within the Maltese Islands of exotic material or in terms of shared decorative styles (such as the multiple circlets on the bone handle that echo similar patterns in Sicily and the eastern Mediterranean).

We can also make inferences of the character of Bronze Age economy from the changes in material culture. The presence of textile in the cave of Għar Mirdum, also seen in the Tarxien Cemetery itself and supported by finds of spindle whorls, loom weights and ‘anchors’ from elsewhere (Evans 1971, 151; Zammit 1930, 72–3), suggests a new strategy of the land use, unless the wool was itself imported. There is also evidence for buffering against fluctuations in resource availability from the local landscape, seen both in the increasing size of ceramic containers in settlements (Barratt *et al.* 2018) and the increasing provision of what are probably storage silos in the many of Bronze Age settlement sites.

### 7.3. The Bronze Age Phoenician transition and the Phoenician/Punic landscape

The transition into history, brought about by contact with the Phoenician world has also been the subject of some debate, not least about the complex palimpsest of their identity (Vella 2014). A major problem is the lack of definitive publication of stratigraphy that crosses the boundary between the latest Bronze Age and the earliest Phoenician, even though target sites exist in a number of places: such as Borġ in-Nadur (Trump 1961, 253–62), and Tas-Silġ (Cazzella & Recchia 2008,



**Figure 7.3.** Distribution of Early Bronze Age dolmen on the Maltese Islands, drawing on data taken from Pásztor & Roslund (1997) (S. Stoddart).

2012; Recchia & Cazzella 2011), Mdina (Buhagiar 2000) and Mtarfa (Ward-Perkins 1938–9, 1942). At least some Phoenician specialists of Malta (Sagona 2015, 180) are now of the opinion that there is sufficient evidence to show the co-existence of Late Bronze Age occupation with the Phoenicians, countering the argument for a hiatus that has been sometimes made (Brusasco 1993; Gómez Bellard 1995, 452; Bonanno 1993a, 236–8). Nevertheless, the fact remains that what is still needed is a convincing settlement stratigraphy (Stoddart 1999, 142) and independent absolute dating to settle the question.

The arrival of the Phoenicians was dependent on a new level of navigational skills and reliability of ships (Broodbank 2013). The dating of permanent settlement in the western Mediterranean by Phoenicians is a matter of some controversy, particularly when comparing textual and archaeological sources (Mederos Martin 2005). In Malta, this is illustrated by the discovery of a fragment of a thirteenth century BC cuneiform inscription on crescent-shaped brown and white agate material at Tas-Silġ (Cazzella *et al.* 2011, 2012) which was found in a much later context. It is the most westerly example of cuneiform in an ancient level, but given the Hellenistic date of the floor in which it was found, it is very difficult to establish the timing, meaning and mode of transport. On this basis, the arrival of the Phoenicians could have been as early as 1100 BC, if emphasis is given to textual evidence or as late as 800 BC if greater weight is given to archaeological evidence without the application of any absolute dating. One clear indication is the recent discovery of what appears to be a Phoenician shipwreck off Gozo dating to 700 BC (Azzopardi 2013; Gambin & Sourisseau 2015; Sourisseau 2015; Gambin 2015; Renzulli *et al.* 2019). From this period onwards, we are dealing with the cultural seascape as well as a cultural landscape of Malta (Vella 1998; Vella & Anastasi 2018; Azzopardi 2013). This point is not only shown by shipwrecks and ceramic imports, but also by feasting from the sea, illustrated by the offerings at Tas-Silġ, the principal sanctuary on the island at least from the Punic period (De Grossi Mazzorin & Battafarano 2012; Fenech & Schembri 2015; Corrado *et al.* 2004).

The main evidence for Phoenician occupation of the islands is largely funerary and the settlement distribution is substantially an inference from their location (Said Zammit 1997; Sagona 2002). The most sophisticated analysis was first undertaken by Said Zammit (1997, 65–9). This work demonstrated the early nucleated concentration of Phoenician settlement in the central citadel areas of the island (Mdina/Rabat, Malta and Rabat, Gozo) in direct continuity with the preceding Bronze Age phases. Said Zammit was able to show from the dated tomb groups which were then

available, a first spread of settlement towards another probable nucleation in the Paola/Marsa Grand Harbour area during the full Punic period (post-600 BC) and an increasing density of presumably rural settlement towards the southeast of the main island including around Żurrieq and Marsaxlokk (Said Zammit 1997, 43). Said Zammit estimates that the nucleations of Rabat (Malta), Grand Harbour (Malta) and Rabat (Gozo) could have been as large as 50, 35 and 8.5 ha, respectively. Sagona (2005, 223ff) has analysed the available excavation data and distinguishes (residential) Mdina (c. 35 ha) from (sacred) Rabat totalling 45 ha. Said Zammit also suggested that the distribution of undated tombs showed a much denser rural landscape, a point that was later picked up by Sagona (2002, 681) once some more of the provenanced tomb groups had been investigated.

A further feature of the Punic landscape is the presence of ritual landmarks visible to mariners approaching the islands, a nodal network common to the Phoenician and Punic world (Vella 1998). On the Maltese Islands (Sagona 2002, 273–7; Vella & Anastasi 2019), the western extremities of both the major islands are marked by such structures: Rar ir-Raheb on western Malta and Ras il-Wardija (Cagiano de Azevedo *et al.* 1964–73, 177–80) on Gozo. In addition, eastern Malta is dominated by the upper ground around Tas-Silġ (Cagiano de Azevedo *et al.* 1964–73), the site of the major sanctuary built on Neolithic ‘temple’ and of sufficient wealth to be considered worth plundering by Verres, the notorious governor of Sicily in Roman times. This site was set slightly inland but easily visible from the west above the harbour of Marsaxlokk. Sagona also mentions a series of ‘sacred wells’ and stele which were clearly less visible from the sea and generally inland at locations such as Rabat (Malta), Paola and Kordin (Sagona 2002, 275).

By the time of the Punic period (after the sixth century BC), their Levantine cities had been incorporated within the empires of the Middle East, and the Punic cities of the west developed strategies of more independent local intensification, which included territorial expansion (seen more prominently in nearby Carthage) and rural intensification (De Grossi Mazzorin & Battafarano 2012; Fiorentino *et al.* 2012; Locatelli 2005–2006). Malta appears to provide a small-scale example of this general process. What is clear is that the Maltese Islands had entered a new geo-political context (Stoddart 1999, 142–3) which had immense implications for the carrying capacity of the islands. The islands were no longer necessarily dependent substantially on their own subsistence resources but part of a wider network, that could, for the first time have comprised appreciable external investment of human and other capital. Debates on population levels depend on how





**Figure 7.5.** The cultural heritage record of the Punic tower in Żurriq through the centuries: a) photograph by Thomas Ashby, c. 1910 (© British School at Rome); b) scan by John Meneely; c) watercolour by Jean Houël, late 1770s (Hermitage Museum, St. Petersburg); d) scan by John Meneely with post-processing to reveal some internal details set on the plan by Jean Houël.

terraces and field systems. Field construction remained a central feature of Maltese agriculture through Classical and Late Antiquity, the Middle Ages and modern times. The excavation at Taċ-Ċawla just south of Rabat on Gozo uncovered lines of probable vine pits and trenches cut into the prehistoric levels which are more convincingly of Roman date, but such practices may have started earlier to maximize return. As for rural farmsteads, it is also highly probable that many of the later Roman farmsteads had their foundation during this period (Vella *et al.* 2017). The clearest direct spatial evidence for Phoenician/Punic material has been found by the North West Malta survey project (Docter *et al.* 2012) which showed a fairly comprehensive light scatter across the landscape with a tendency for higher

concentrations to cluster on the terraces just below the garrigue escarpments. The surveyors suggest that there may have been a coastal site to the north in the Buġibba area, which would match Phoenician/Punic settlement organization in other areas of the Mediterranean. Even more accurate datable evidence of this has been provided (on stylistic grounds) by the Żurriq tower structure in the back garden of the present-day parish priest's house, a tantalizing survival of a more prosperous rural structure, first planned and drawn by Houël, and now integrated with a 3D digital scan of the relevant part of the surviving structure during the FRAGSUS Project (Fig. 7.5). Sagona (2005, 239ff) also dates six round towers in the Maltese islands to the Punic period.

#### 7.4. Entering the Roman world

We can give a significant date (218 BC) to the entry of Malta into the Roman political system, but this political event had relatively little effect on the landscape processes of the islands. The three nucleated centres (Mdina, Rabat (Gozo) and Paola/Marsa) and the surrounding rural landscape had been established during the preceding Punic phase. Similarly, the population levels of the islands probably remained in the region of the 18,000 suggested by Said Zammit (1997) (although see Chapter 8 for a counter argument). The dating evidence of both urban and rural structures is, however, better for the Roman period (Bonanno 1977, 1992), in part because of the now well dated products of connectivity, mainly pottery (Bruno 2009). In urban Rabat (Malta), we now have evidence of rich *domus* (Ashby 1915, 34–42) and in the countryside some 22 farmsteads (Bonanno 1977, 75), most of which were engaged in agricultural production, especially olive oil production (Anastasi & Vella 2018), but some of which might be classified as villas, such as the villa on the beach of Ramla on Gozo (Bonanno 2018).

The current urban evidence for the Roman period has been summarized by Anastasi (2019, 3–31) showing the future promise of recent rescue work, particularly in conjunction with building development on the Maltese islands. The examples she has so far studied reveal a range of activities: quarry activity from Bulebel, pottery wasters indicating kilns from Foreman Street, Rabat (Gozo) and a sequence of urban stratigraphy dating from the second century BC until the fourth century AD of street fronts and cisterns from the Melita Esplanade in Rabat Malta. These show, as might be expected, strong interaction from across the Mediterranean including Pantelleria, North Africa, Greece and Sicily. In some urban deposits in Rabat as much as 90 per cent of urban ceramic material was imported. In the earliest phases, wine was imported but olive oil seems to have been largely of local production served with food off locally produced pottery. By the second century AD food was increasingly served off imported pottery.

Detailed survey evidence comes from three sources, the Cambridge Gozo survey, the Mgarr ix-Xini survey and the North West Malta survey. The analysis of the material from the prehistory focused Cambridge Gozo survey was less sensitized to the distinction between Punic and Roman, but it does appear that the greatest concentration of Roman occupation was in two locations, one on the Ghajnsielem plateau and the other on the Ta' Ghammar plateau and its slopes. Both of these concentrations had a reasonable proportion of African Red Slip pottery suggesting that

occupation continued into the full imperial period. In the Mgarr ix-Xini survey, there appears to have been a decline in Roman activity compared with the relative intensity during the Punic period. The North West Malta survey (Docter *et al.* 2012) has the greatest detail since the classical world was the principal focus of the project. This work convincingly shows an increased intensity of occupation in the same areas initiated during the Phoenician/Punic period, namely on the terraces immediately below the escarpments, focused on three principal concentrations, in association with rock-cut tombs. This latter association strengthens the inference of Said Zammit (1997) that farmsteads were closely related to tombs. Some records of structures of two of these (Ġebel Ghawzara and San Pawl Milqi) were pre-existent and from the equipment recorded seem to be closely related to oil production (Locatelli 2008). The combination of Locatelli's analysis and the evidence of the survey suggests small estates of 10 to 14 hectares were engaged in oil production, and dependent on a readily available spring or a large cistern. A more recent survey of the evidence suggests that olive oil production was a particular feature of the Roman landscape of Malta (Anastasi & Vella 2018). One concentration found in the survey seems to intensify in the later Antique period and (see §7.6) further intensify in the Medieval period, providing an intriguing link into the next phases.

#### 7.5. Arab

Historical sources suggest that islands entered the Arab world in about AD 870, but both historical and archaeological evidence are relatively scanty of information on the cultural landscape. It is highly probable that many of the surviving water systems date back to this time (Jones & Hunt 1994; Buhagiar 2016), but that may be as much expectation as dated reality. Whatever the age of these systems, the recent work of Buhagiar (2016) highlights the crucial importance of access to water for the cultural landscape of Malta. In earlier prehistory, access to a reliable spring was an important factor in settlement location (Grima 2004; Ruffell *et al.* 2018). Once nucleation took place on an increasing scale, starting in the Bronze Age, locating deeper water supplies and ultimately their storage became increasingly important.

Much can be retro-projected back from the medieval world of the twelfth century, because of the continuing Islamic presence in later periods (Bresc 1991, 51), but there is the danger that this becomes an Islamic trope of resistance to the advancing Christianity of the Norman world, emphasizing an Utopian egalitarianism, without slavery (Bresc 1991, 49).

Another historical trope is that the islands were largely abandoned with a population as low as 5000, allowing a regeneration of woodland coverage in the islands (Brincat 1995).

The historiographic tropes of insular abandonment and re-afforestation are being incrementally contradicted by a growing body of archaeological evidence. Published ceramic sequences from Mdina indicate that by the ninth century the town had been heavily re-fortified and received a steady flow of imported amphorae and fine wares, mostly from Byzantine areas adjoining the Ionian Sea, but also, to a lesser extent, from Muslim areas. A rural deposit from Ħal Far (SE Malta) similarly seems to document an early stage in the introduction of characteristic North African hand-made casserole types alongside Ionian or Adriatic amphorae – an event probably dated to the tenth century (Bruno & Cutajar 2018; Cutajar 2018). Pollen analyses also suggest that the cultivation of cereals was never interrupted by an event of depopulation, nor does it support the idea that the island was re-afforested (Carroll *et al.* 2012). The evidence suggests that Malta was rapidly and systematically amalgamated into the prevailing Islamic cultural and economic world-system at the latest by the early eleventh century.

The three systematic surveys from the Maltese Islands were uniformly weak in retrieving evidence for this period because of the lack of dated pottery series. The Cambridge Gozo survey data also require more study, but the initial work suggests the presence of one large settlement concentration west of the northern extension of the Xagħra plateau and a smaller presence further west. These results are enough to give confidence that an Arab landscape can one day be recovered.

## 7.6. Medieval

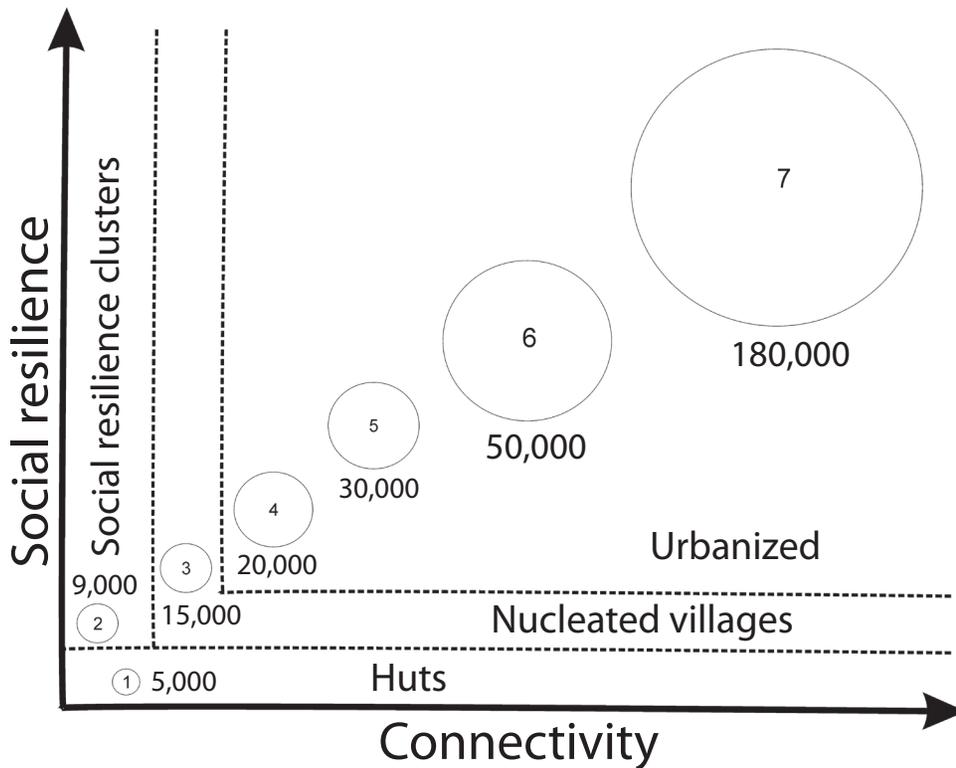
The Medieval landscape also remains largely unstudied and the archaeology unpublished (see Chapter 10). The historical source of Al-Himyari mentions pines (although most of Malta did not have them except at Xemxija c. AD 400–1000 (C.O. Hunt, pers. comm.)), junipers and olive trees, harbours, deforestation and the abundance of fish and honey (Brincat 1995; Fiorini 1993a, 176) (see Chapter 3). Idrisi from the twelfth century rather stresses pasture, flocks, fruits and honey (Luttrell 1975, 32). It is very difficult to quantify these claims unless we turn to the pollen cores, but here our study concentrates on earlier periods. Population levels have been estimated to be about 10,000 for the early fifteenth century (Blouet 1984, 38; Wettinger 1969; Brincat 1991, 97) with some fluctuations in times of

raiding and probably disease. By the early modern period of the sixteenth century, it has been estimated that population levels had doubled to 20,000 and deforestation was once again almost complete (Blouet 1984, 39; Brincat 1991, 97) (see Chapter 8).

The human occupation of the landscape by about AD 1400 appears to have been substantially dispersed (Blouet 1984; Fiorini 1993a & b; Stoddart 1999) (see Chapter 10) apart from significant nucleations in *castrum maris*, Birgu and Rabat on Malta. The greater insecurity for the smaller island of Gozo may have led to more nucleation, particularly in Rabat at the centre of the island. Blouet (1984) suggests that increased insecurity and cotton production in the course of the fifteenth century, prior to the arrival of the Knights, led to greater nucleation. The Cambridge Gozo survey recovered material of this period, but apart from the obvious evidence near the citadel of Gozo, the data require further study. The North West Malta survey (Docter *et al.* 2012) clearly shows the foundation of the local medieval village of Bidnija, emerging from late Antique origins. The Mgarr ix-Xini survey shows a gentle increase in occupation during the Medieval period. The FRAGSUS Santa Verna excavations give some indication that there was an extra mural chapel, with the burials originally found by Ashby, which gave its name to the megalithic structure.

## 7.7. The Knights and the entry into the modern period

The choice of Malta by the Knights in AD 1530 created a completely different environment for human and financial capital in the islands (Stoddart 1999) and much of the detail of these changes are covered in Chapter 10. The revenues of the Order of Knights from across Europe could be placed in the islands, enabling new infrastructure particularly connected to defence and shipping, requiring new levels of manpower and opportunities for new communities. The population consequently rose from about 17,000 in AD 1530 to about 43,000 in AD 1617 (Mallia-Millanes 1992, 4–5) or even higher by some estimates (Brincat 1991, 97). At the same time, the islands became more urbanized as measured by nucleation. Greater political and financial opportunities existed in the nucleated centres and the proportion of the population in nucleated centres increased from 5 per cent before the arrival of the Knights to 54 per cent in the AD 1760s (Mallia-Millanes 1993, 15), just before the toppling of the Knights by Napoleon. The major nucleation, in response to the priorities of connectivity and fortification, was placed around the Grand Harbour. War, famine and plague caused some fluctuations, but generally the resilience



**Figure 7.6.** The changing patterns of social resilience, connectivity and population (within circles) over the course of the centuries in the Maltese Islands (Chronology of numbered circles: 1) Sixth millennium BC; 2) Fourth millennium BC; 3) Second millennium BC; 4) First millennium BC; 5) AD 1550; 6) AD 1700; 7) AD 1900) (S. Stoddart).

of the islands was increased because of their connectivity and the implementation of more integrated political structures.

These trends also created demands on the rural landscape. The incoming Knights set up legal structures and investigative procedures, preserved in the *cabrei* records to understand and, to a certain extent, maximize the resilience of production from the landscape. Like many such initiatives the intent was more powerful than the outcome (see Chapters 8 & 9), but the increase in terrace construction almost certainly intensified in this modern period.

The incorporation of the islands into the British Empire intensified these trends. The effect was most readily seen in the increase in population levels from about 100,000 in AD 1800 to about 200,000 one hundred years later. The population increase was tempered by emigration (Brincat 1991, 97) at various times since the enlarged economic and political network gave rise to external opportunities in various parts of the British political and economic system. Very substantial immigration also took place immediately after World War II, often to other parts of the British Commonwealth such as Canada and Australia. The Durham

geographers (Bowen-Jones *et al.* 1961) substantially misunderstood the economic opportunities offered by Independence, concentrating their analysis on a continued agricultural intensification. In fact, the continued population increase of the Maltese Islands to 400,000 inhabitants today has been supported by new levels of connectivity and political integration within wider structures including the European Union, that rapidly included the Schengen Area and the Euro currency. Human and financial capital have been the central foci of current trends. These have included banking, gambling, uncertain sources of money and inward investment, education, tourists and tax exiles. Such influxes of money have led to increased values of buildings and land which today lie at the heart of Maltese identity. '*Mingħajr art u hamrija, m'hemmx sinjorija*' translates as 'without land and soil, there is no wealth' (Joe Inguanez pers. comm.). As the *FRAGSUS Project* has shown, this is a land that has been continuously under pressure, but where human capital has been increased in capacity by a sequence of different strategies and devices of social resilience in interplay with changing levels of connectivity (Fig. 7.6).

# Temple landscapes

The ERC-funded *FRAGSUS Project (Fragility and sustainability in small island environments: adaptation, cultural change and collapse in prehistory, 2013–18)*, led by Caroline Malone (Queens University Belfast) has explored issues of environmental fragility and Neolithic social resilience and sustainability during the Holocene period in the Maltese Islands. This, the first volume of three, presents the palaeo-environmental story of early Maltese landscapes.

The project employed a programme of high-resolution chronological and stratigraphic investigations of the valley systems on Malta and Gozo. Buried deposits extracted through coring and geoarchaeological study yielded rich and chronologically controlled data that allow an important new understanding of environmental change in the islands. The study combined AMS radiocarbon and OSL chronologies with detailed palynological, molluscan and geoarchaeological analyses. These enable environmental reconstruction of prehistoric landscapes and the changing resources exploited by the islanders between the seventh and second millennia BC. The interdisciplinary studies combined with excavated economic and environmental materials from archaeological sites allows *Temple landscapes* to examine the dramatic and damaging impacts made by the first farming communities on the islands' soil and resources. The project reveals the remarkable resilience of the soil-vegetational system of the island landscapes, as well as the adaptations made by Neolithic communities to harness their productivity, in the face of climatic change and inexorable soil erosion. Neolithic people evidently understood how to maintain soil fertility and cope with the inherently unstable changing landscapes of Malta. In contrast, second millennium BC Bronze Age societies failed to adapt effectively to the long-term aridifying trend so clearly highlighted in the soil and vegetation record. This failure led to severe and irreversible erosion and very different and short-lived socio-economic systems across the Maltese islands.

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