

Methods of Date Assignment for cart-ruts in the Maltese Islands: Discussing relationships with Bronze Age fortified settlements on promontories

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ABSTRACT

A divergence of opinions characterises the literature discussing the period of use of cart-ruts in the Maltese Islands. A multi-period use and problems in the methodology applied to date these features are identified as causes for this situation. Insights from such discussion are used to assess the evidence forwarded to ascribe the cart-rut phenomenon to the Bronze Age period. This hypothesis is mainly based on a perceived spatial relationship with fortified Bronze Age settlements on promontories and a claimed loss of function by the Phoenician period. Reconsideration of the concepts involved in assigning dates and establishing associations between different archaeological features, together with a reassessment of field finds, challenge opinions favouring a Bronze Age date to the cart-ruts.

Few subjects in the Maltese archaeological landscape have stimulated as much discussion, created as many controversies and claimed the same number of conclusions as the cart-rut phenomenon (Figure 1). The profile, destination, dating and purpose of this enigmatic heritage have often been discussed, but many would agree that a real answer is still elusive.

The intriguing nature of these surface markings has undoubtedly been central in attracting attention to this phenomenon. Short of a convincing explanation, a number of conflicting hypotheses have emerged, the outcome of which is considerable literature on the subject. Non-conclusive and often contradictory in their results, these studies highlight our poor knowledge on the transport systems of Maltese prehistory and classical history.

Dating the Cart-Ruts

As dating issues remain central for understanding cart-ruts, most studies have attempted to assign a period of use to this phenomenon. The scope of conclusions

reached, however, from what is ultimately the same corpus of evidence is worth further evaluation.

A multi-period date for use of cart-ruts could explain the diverse conclusions, even if the often-assumed position to restrict dating considerations in favour of a particular period is challenged. The possibility that the ruts were used in the transport requirements of different cultures is slowly taking ground (Anati 1988: 37; Magro Conti and Saliba 1999: 39; Ventura and Tanti 1997: 236 fn 41). The presence of ruts in different countries (Bugeja 2000: 37) favours such possibility especially when one considers the presence of similar tracks from culturally unrelated countries such as Switzerland (Schneider 2001: 12-22), Germany (Bakker et al. 1999: 783-784) and the American continent (Kelly 1997).

A multi-period date is also suggested by the three hundred years which separate the ruts used by twentieth century farmers and other ruts which were already not in use when first described by Abela (1647: 69) in the seventeenth century. Different karren features on two adjacent tracks at Dingli provide further support to a long period of use (Drew 1996: 410, 415).

Additional evidence comes from the literature, which has for long distinguished ancient ruts with a “V” shaped profile and varying inter-rut distance from the presumably more modern, generally wider, shallower ruts with a more rectangular profile. The latter group also differs by following a more parallel trail and unlike the ‘ancient’ ruts is accompanied by inter-rut markings (Zammit 1928: 18-20). Even if elements of the two rut profiles are occasionally observed on the same trail (as at Mtarfa and Ta’ Blankas) this subdivision into two groups with different profiles remains to date a valid generalisation.

Ghar Zerriegha is a site where both types of rut profiles may still be observed in the same area. The better-known rut pair (Trump 2000: 136) is found within metres of a presumably more modern rut pair, passing through a surface quarry further inland. Unless two different vehicle types were used contemporaneously, a period of time sufficient for the evolution of different vehicle-land relations or carving of different rut profiles explains the difference in cart-rut details.

Although an appreciation of a multi-period use for ruts does not simplify investigations, the above reveals that it is an aspect that has to be considered. Certainly it questions conclusions based on generalisations, and places emphasis on studies that draw conclusions from limited or single rut sites.

While the number of dating proposals may be considered as evidence for a multi-period date for ruts, it is also indicative of some problems in the methods utilised. Such problems allow an over interpretation of the evidence, allowing the possibility to argue in favour of any of the different dates proposed in the literature. The first part of this paper attempts to examine these approaches, in particular looking into the arguments and limitations pertaining to the conclusions. Insights from such discussion will be used in the second half of the paper to reassess relationships between cart-ruts and fortified Bronze Age settlements on promontories.

A rut within a datable stratigraphical sequence - the gold standard indirect dating method - remains desirable but elusive. A satisfactory scientific technique to date the formation of the cart-ruts (direct dating) still waits to be applied. Short of such discoveries, dating has mainly depended on indirect evidence. It is in the interpretation of this evidence that faults have been made in the past.

While other possibilities are not excluded, the hypotheses proposed in the literature have been noted to fall into three main categories. Although presented here as distinct, one has to note that it is not unusual for authors to use more than one approach in supporting their hypothesis. Furthermore, each category may be viewed as a different level of proposal contingency to the observed data.

1) Inductive/Interpretative approaches

In such approach authors formulate a working hypothesis from limited observations and subsequently elaborate social, environmental or other models to support their claims. In such discussions, observed rut occurrences are selected to support a particular hypothesis. Supportive features are emphasised while problematic aspects are overlooked. Missing evidence may even be considered as supportive of the hypothesis proposed. Arguments forwarded may be consistent but often generalised to explain the rut phenomenon. The result, however, is that often the mysterious ruts turn out convenient to explain what remains problematic in our understanding of the past.

The use of the Mgarr Barrani ruts as a transport system during the Arab period is one example in this category (Abela 1647: 69). By interpreting the placename literally, the historian attempts to include the cart-ruts as evidence for the exportation of stone to other countries. Only the presence of Arabic letters on presumably Maltese stone found in other countries is forwarded as evidence for such endeavours to have taken place during the Arab period. On the other hand Zammit (1928: 23-25) interpreted ruts as evidence for soil transportation from level ground to hilltops during the Temple period. Even when the occurrence of ruts near fields is considered supportive of this purpose, no reliable evidence is quoted to assign such activity to the prehistoric period in exclusion of other periods. Fenton (1918: 67-72) proposes that ruts represented a system connecting springs to settlements at times of a fairly dense population, supported by a humid climate. Once again, no evidence for such conditions is presented and the existence of such an environmental model remains to be proven. Mifsud et al. (2000: 42) suggest that some ruts belong to a period when the Maltese Islands were part of a larger landmass. Castagna (1888: I,8) interprets ruts at southern Gozo, Comino and northern Malta to be the last remains of a land bridge that once joined the three islands.

A problem with such an approach is that most claims are difficult to prove, while at the same time remaining possible. While a certain degree of interpretation will remain indispensable to draw conclusions, it is unlikely that a final convincing dating for the ruts will result wholly from such research method.

2) Dating by Association

An approach that allows a better correlation with the evidence is one that attempts rut dating by association with other better-known archaeological remains. An excellent summary of such studies has already been published (Ventura and Tanti 1994: 229-231) and has been a valuable source consulted in this study. Contrary to what Zammit (1928: 22) maintained, the presence of cart-ruts near megalithic sites claimed for the Temple period is not uncommon. Cart-ruts have been documented near Skorba, Hagar Qim, Mnajdra, Borg l-Imramma (Ventura and Tanti 1994: 230), San Lorenzo megaliths, Tarxien Temples, Kordin, Ta' Rozzat, Ta' Lippija, Mensija megalithic remains (Gravino 1958: 5, 11) and Qortin l-Imdawwar.

A possible link with the Bronze Age has also been forwarded. Ruts present near the dolmens at Ta' Cenc, Wardija Ta' Zuta (Harrison Lewis 1977: 60) Borg in-Nadur and Wied Filep may be interpreted as evidence of a link between ruts and the Tarxien Cemetery culture. The presence of cart-ruts near Bronze Age fortified settlements occurs (see below) and together with ruts observed at the promontories between Gebel Ciantar and Bingemma have been considered as indicative of rut use during this period (Conti and Vella 1978: 7).

Occurrence of ruts near remains of the historical periods has been mentioned by Ventura and Tanti (1994: 230), these two authors listing ten sites where ruts have been documented near shafts of Punic Tombs. Other sites such as Ix-Xaghra ta' Ghar is-Sigra, Nadur (Malta) and Ta' Zuta may be added to this list. Lanfranco (1961: 16) refers to the ruts near Pompei, Salina, Mtahleb, Birzebbuga and Mtarfa when arguing for a Roman date. Quarries attributed to the classical period have been noted to be "in close association" (Bonanno 1990: 30) and "clearly associated" (Magro Conti and Saliba 1999: 39) with cart-ruts.

While the scope of dating proposals may be glossed over as evidence for a multi-period use of ruts, the possibility of over interpretation of the evidence

remains. The different dating proposals noted in the literature review do reveal problems inherent in this approach.

In an archipelago that has experienced extensive demographic pressure, a multi cultural use of a single archaeological site or area is not uncommon. Thus, any dating proposals should take such a possibility into account. Considering ruts at Zebbiegh, one should really question whether these are related to the Neolithic, Temple period or Bronze Age remains at the nearby Skorba site or the quarry and possible tomb remains adjacent to the ruts, rather than restrict dating to a particular period. Similarly ruts near the Tarxien Temples may also be related to the Tarxien Cemetery or the Roman period remains there, rather than to the Temple period. Furthermore, ruts near Kordin could be related to the eighteenth century gun emplacement on site, while post-temple period dismantling of a megalithic complex's building blocks (M.A.R. 1953-54: 1) could provide a plausible explanation to the ruts near Mnajdra. These explanations of cart-ruts near temples stand without resorting to the prehistoric period for an answer.

When use of cart-ruts for transport is assumed, it often remains impossible to tell whether a particular trail is near its destination/origin or part of a longer transport route. The possibility that the latter case may occur should really question the relevance of drawing conclusions from sites where rut trails occur near an archaeological site.

A third problem concerns the nature of the relationship between cart-ruts and other archaeological features. Caution should be exercised on the meaning given to the term 'association' as used in the literature on the subject. In archaeology, two or more objects are associated if during a scientific excavation they are found to lie within the same context. If assessment of the site formation process does not indicate otherwise, a datable object in the sequence may help in giving a *terminus post quem* of another unknown find within the same context. Such conclusions are not possible when discussing cart-ruts, as a context linking ruts to other archaeological sites remains missing. Unfortunately, proximity has often been interpreted as association.

The term 'association' also carries a mathematical connotation. In statistics, two events are associated if their occurrence is found to be more frequent than that possible by chance. The literature on cart-ruts occasionally reveals that claimed associations are

sometimes considered as if arising from statistical studies (Pace 1995: 59) when such studies on cart-rut features have still to be performed. Only after such investigations and after confounding factors are excluded, may appropriate conclusions from such method be drawn.

Generally, the underlying assumption that cart-ruts may be found near sites related to the rut purpose is a valid one. Limitations are however evident in the process of reidentification of such rut to archaeological site relationships.

Much work remains to be done. Focusing on areas where ruts occur in close vicinity of a single period site may result in more sustainable conclusions. Unbiased statistical analysis of the characteristics of ruts and other archaeological sites may start to re-evaluate the claimed hypotheses in a number of cases. Other elements of association beyond proximity may also be investigated to achieve an evidence-based conclusion. The results of a cart-rut survey within a GIS reconstruction of the Maltese palaeo-landscape (as proposed in Hughes 1999) offers considerable interest to this regard.

3) Ruts spatially superimposed on archaeological features

A way to resolve the problems encountered in the previous approach involves consideration of ruts that are spatially superimposed on other archaeological features. Even in cases where cross cutting was possibly coincidental, assessments may still be attempted to provide a temporal relationship of cart-ruts to better datable archaeological remains.

Shafts of Punic tombs interrupting ruts remain the most known examples in this category, with surface quarries recently also given particular attention in the literature. Other sites in this category include cases of ruts passing over caves (Trump 2000: 133) as well as under a medieval chapel, roads and modern buildings (Magro Conti and Saliba 1999: 38-39; Trump 2000: 33).

These particular interesting cases, however, have not resolved the divergence in opinion amongst archaeologists. Ruts observed on the megalithic blocks of Temples (Gravino 1958: 11) have not been confirmed. Cliff falls and cave collapses that interrupt ruts (Trump 2000: 133, 155) are difficult to date as is the geological subsidence of the island (or rising sea level) discussed to explain the submerged ruts at St.

George's Bay, Birzebbuga. In the case of the rut pair near the chapel at Ta' Bakkari (M.A.R. 1922-23: II) a pre-sixteenth century time bracket, although significant, is simply too wide to be of any help. Furthermore, although surface quarries are attributed to the classical period, more studies are needed to differentiate such sites from later medieval and post-medieval quarries. The absolute dating assigned for a pair of ruts at Ta' Dun Konz (Magro Conti and Saliba 1999: 39) may be challenged by noting that the ruts in question are lost under the rubble near the wall of the surrounding field, and can be of later date than the quarry. The latter hypothesis stands by assuming that carts were used along the ruts; if other vehicles were used, the ruts and quarry could well be unassociated.

Identical evidence considered by different authors often results in contrasting conclusions. Ruts interrupted by shafts of Punic Tombs are a case in point. The lip of the rut truncated by the Mtarfa tomb is described as a sharp right angle, Gracie (1954: 97) concluding that the rut is older than the tomb. Trump (2000: 35) argues that a particular pair of ruts at Ghar il-Kbir are "cleanly cut by, and therefore older" than the Punic tomb.

In assigning a relative later date for the ruts, Bonanno (1990: 30) questions the Punic date ascribed to these tombs. Furthermore, he argues that Punic tombs could have been dug in ruts associated with Phoenician quarries; such explanation casts doubt on the prehistoric dating usually quoted to explain ruts cut by tomb shafts. Use during the Punic period could have occurred in cases of abandonment of rut trails which later within the same period, became convenient and accessible grounds for digging of a Punic burial site (Ventura and Tanti 1994: 230).

Ignoring the rut profile, opinions were forwarded that argue that the space occupied by the Punic Tomb did not hinder a later passage of rut-related vehicles (pers. comm. J.L. Cilia). This allows scope for a later dating of the cart-ruts relative to the tombs.

In summary, the different authors disagree on the date attributed to the tombs and the time lapse between the use of tombs and ruts. What commenced as a case of hard evidence (crosscutting of ruts with Punic Tombs) ends up in a divergence of opinions and interpretations.

Two sites that are useful for dating purposes by this approach need further study of any reports of their original discovery. Taking into account the dates suggested (M.A.R. 1923-24: V) two adjacent pairs of

cart-ruts (with a gauge of 1.40 metres) on the south-western street within the archaeological site behind the Roman Domus at Rabat, provide substantial evidence that these ruts are related to a road adjacent to the buildings of the third century A.D. (Plate 1). Although the absence of documented Muslim graves on the cart-ruts (pers. comm. N.J. Cardona) leaves us without definite concluding evidence on when these cart-ruts went into disuse, the burials mark a radical change in the use of the site, suggesting that the ruts were not in use at the latest by the early thirteenth century A. D. The second site was found on a promontory at Marsa (Malta). Cart-ruts carved on a large threshold to a building were observed continuous with other ruts on the rock surface, the latter ruts being in their turn directed towards a quay constructed of sizable ashlar blocks (Barbaro 1794: 5). A long period of use for the promontory is suggested by the coin evidence, which Ashby (1915: 29) attributed to the period between the third century B.C. and the ninth century A.D. A recent reassessment of the evidence from the site attributes the inscriptions found to the Byzantine period, while the amphorae are ascribed to the period between the sixth and eighth century A.D. (pers. comm. B. Bruno; Bruno and Cutajar: in press).

Although limitations are evident in the study of cart-ruts intersecting other archaeological remains, this approach should be studied further. An appreciation of the site formation processes is essential to avoid hasty conclusions. A general reassessment of the sites involved in this approach may result in new information. Search for remains previously overlooked may also contribute.

Case Study: Cart-Ruts and Bronze Age Fortified Settlements

Cart-ruts near Bronze Age settlements on promontories present an interesting case study where the above approaches were combined to assign a date for the rut phenomenon.

In the hypothesis connecting ruts to these settlements the appreciation of the hostile social environment prevalent during the period under question is crucial. It is recognised that preoccupation with security in the later Bronze Age resulted in the adoption of easily defensible territories, namely hilltop and promontories, for settlement purposes (Trump 2000: 22). Supported by similar settlements in Sicily together with the presence of relevant artefacts, this view has remained

an unchallenged interpretation of the later prehistory on the Maltese Islands.

The hypothesis formulated goes beyond proximity in attempting to find association between ruts and settlements. Slopes around promontories and hilltops are thought to have provided a natural solution to creating a defensive system (Pace 1995: 59). A claim may be made that these slopes were perceived as natural barriers that hindered or prevented accessibility to the settlements. Use of these slopes as transport routes goes against the rationale for choosing such sites for defensive purposes.

The relevance of the above to the period of use of the local cart-ruts is significant. In contrast to plateaux, these promontory settlements provide focal points in the local landscape, which if coinciding with the projected direction of a rut group, may be interpreted as the destination/origin of the transport route. Such arrangement would not only provide a purpose for the cart-ruts but also assigns them a date.

Site 1 – Qala Hill

The most explicit connection between cart-ruts and a Bronze Age site is claimed for Qala Hill (GR 440773) near Mgarr (Malta). The presence of Borg in-Nadur sherds and at least fourteen silo pits grouped on a headland suggests that this area was used as a Bronze Age settlement. Megaliths found at the neck of this promontory are thought to be the remains of the settlement's defensive wall (Trump 2000: 157). Mallia (1968: 2) interpreted two groups of megaliths here as the remains of bastions to this wall. He also identified a ditch to the north-west of the site, but its vertical sides and the mutilated pit at one of its corners indicates that a date consistent with the nearby twentieth century ridge defences is more likely.

The rut pair 'associated' with this promontory is claimed to approach the area from the west dividing into two, each "branch heading for the junction of the wall and cliff lip" (Trump 2000: 157, Fig. 25) the area claimed as an access to the settlement.

Site 2 – Wardija ta' San Gorg

On the southern part of the islands, the crossing of the Maghlaq fault system with a northeast trending fault in the area of il-Wardija ta' San Gorg (GR 458670) has resulted in a promontory standing at an elevated position over the surrounding landscape. At the junction between the blue clay and the upper coralline limestone, the exposed perched water table supplies a

number of springs contributing to the fertility of the underlying fields. These springs together with the easily defensible promontory were probably noted by the Borg in-Nadur folk who transformed the area into a settlement. Several features of this culture can still be noted, namely at least thirteen pits and the remains of a defensive wall. The possibility of a settlement has been strengthened by reports of pottery finds typical of this culture and evidence of hut foundations (M.A.R. 1972-73: 72).

The main cart-rut site in the area is located within a kilometre to the north extending through the areas known as Misrah Ghar il-Kbir (GR 456679) and Ta' Dun Konz (GR 459680) (Magro Conti and Saliba 1999: 38-39).

One possibility that needs to be explored is whether a southern projection of the main cart-ruts in the area (Misrah Ghar il-Kbir k/a Clapham Junction) could have been directed to the Wardija ta' San Gorg settlement.

Site 3 - Borg in-Nadur

Borg in Nadur (GR 574656), the type-site of the Maltese middle Bronze Age, lies on the eastern part of the islands situated on the headland formed at the junction of Wied Saptan and Wied Dalam. The cyclopean wall of this settlement is the best preserved on the islands and contains within its bounding precinct remains of huts belonging to the homonymous culture (Trump 1961: 254-257).

To the north west of the defensive wall a stretch of cart-ruts on the barren rock may still be noted, "heading" towards the wall (Trump 2000: 95). Further cart-ruts close to areas with Bronze Age activity (which could possibly be related to the Borg in-Nadur settlement) are found near Ghar Dalam. Cart-ruts were recently uncovered near the Ghar Dalam Museum (GR 574660), not far from the Ghar Dalam cave that yielded rich Borg in-Nadur phase deposits (Trump 2000: 92-93). Further downhill more Bronze Age deposits were found near the Ghar il-Friefet cave. The nearest documented rut group to the latter site was found at the northern side of St. George's Bay and was allegedly continuous with another group crossing the silo-pits and running across the coast on the opposite side of the bay documented by Adams (1870: 244).

Site 4 - Misrah Ghonoq

Another interesting site occurs at Misrah Ghonoq (GR 483757), in the area containing Fort Mosta. This area is

the remaining peak of an upper coralline block, which through geological movements associated with the Great Fault, came level to a larger lower coralline plateau to the south. Erosion of the surrounding clay substrata ensured the formation of a promontory, a "very suitable site for Bronze Age settlement" (Trump 2000: 144).

An eighteenth century documentation of a megalithic wall sixteen metres in length (Grognet 1854), possibly to be identified with the enclosing wall of the settlement, may be claimed as support for this use. This proposal finds further support from a silo shaped cavity found close to the British fort, and the location of these man made features on a promontory.

Cart-ruts have been described by various authors to the south-west of this promontory (Ventura and Tanti 1999: 222-229; Magro Conti and Saliba 1999: 38-39). Despite modern dumping present in the area, a pair of ruts may still be followed for a distance of at least thirty metres. This group may be part of the cart-ruts described by Vella (1972: 13) winding in alternate north and east directions, of which 275 metres were still visible to the east of the fort. These tracks divided into two pairs of ruts, with a length of 50 and 55 metres. Further cart-ruts described in the survey sheets have not been retraced.

Trump (2000: 145) interprets the cart-ruts here as heading for the Bronze Age village, further progress beyond that point "barred by the cliff".

Site 5 - Ras il-Gebel

At Ras il-Gebel megaliths 1.50m high, with possible remains of a tower at the north-eastern end (GR 419767) together with Bronze Age sherds suggests a Bronze Age village (Mallia 1968: 2-3). Although ruts are found near Ta' Mrejnu, the pair that is linked to this settlement follows a long course along the promontory. Trump (2000: 157) interprets once again such an arrangement as indicative of Bronze Age use for the cart-ruts.

Summary

Thus at three sites, namely Misrah Ghonoq, Wardija ta' San Gorg and Ras il-Gebel, one direction of the cart-rut group in the area could be interpreted as heading towards these promontories. At Qala Hill and Borg in-Nadur the ruts are not only heading towards the settlement in the area but are found within metres of the settlement itself. These observations have been interpreted as placing the cart-ruts securely to the later

Bronze Age (Trump 2000: 35), and as a clear evidence for an association between ruts and Bronze Age settlements better than "with sites of any other period" (Trump 1998: 37).

This conclusion finds support from the prehistoric date of ruts as interpreted from cases of ruts superimposed on Punic tombs. A review of the literature on the subject has revealed that the use of cart-ruts during the Bronze Age has gathered wide support by scholars (Conti and Vella 1978: 20; Evans 1971: 204; Gracie 1954: 98; Lewis 1977: 63-64; Mallia Milanese 1968).

Discussion

In the last decade, through examination of other sites, an historic date for cart-ruts appears to be increasingly favoured by Maltese archaeologists (Bonanno 1990: 30; Magro Conti and Saliba 1999: 38-39). This has shifted attention from the conclusions presented above, but resulting in alternative rather than substitutive explanations.

Although such new interpretations are welcomed, the concerns of this paper remain on the evidence discussed to propose cart-rut use during the Bronze Age settlement. The questions that need to be asked here are whether a revision or confirmation of a late prehistoric date for ruts may be forwarded when considerations are made of the methodology used and significance of the evidence.

The socio-cultural preambles for the Bronze Age hypothesis remain unquestioned. The significance of Borg in-Nadur settlements' location remains a valid method to assign an association between settlement sites and cart-ruts beyond the problems provided by proximity considerations.

Although only a full survey of the areas discussed will provide an appropriate assessment of these claims, further observations and the possibility of alternative explanations call for caution in proposing an association between cart-ruts and the Bronze Age period.

1) Qala hill

Revisiting Qala Hill, only the 'main' rut pair and the northern 'branch' were retraced, a southern 'branch' heading parallel to the settlement's wall before being lost under the fields. A separate trail follows a direction parallel and about 300m away from the defensive wall, while another rut pair approaches the southern aspect of the settlement.

On closer examination it was noted that the northern branch ended at a surface quarry some forty metres to the west of the suggested Bronze Age wall and could not be traced beyond this quarry (Plate 1). It is important here to note that the surface texture on Qala hill appears to be divided into three areas. The land to the east of the claimed remains of the prehistoric wall contains low vegetation on karstic terrain. Immediately to the west of the wall for a distance of at least twenty metres is an area of rough ground with an even more pronounced karstic erosion. Further west the ground is characterised by a much smoother surface. The ruts and quarries at Qala Hill are restricted to this latter, westernmost area.

A claim may be made that the purpose of the northern cart-rut is more compatible with quarrying activity in the area rather than with the prehistoric settlement. Such quarrying activity is at present attributed, on questionable grounds, to the classical period. The southern trails head for an area with features of quarrying but this claim is supported by less convincing evidence. The value of such observations is that the presence of ruts here may be explained without resorting to the Bronze Age.

2) Wardija ta' San Gorg

The Wardija ta' San Gorg promontory is not the only Bronze Age site in the area. Considerable amount of pottery sherds were also found about 600m to the north-west of this location in the fissures of an underground system of passages known as Ghar Mirdum (GR 453672). The finds here have been interpreted as evidence of a settlement which was destroyed following collapse of the underlying limestone secondary to blue clay erosion (Mallia 1965: 9). The finds here were unstratified, but enough to reveal a significant activity characterised by pottery production in the middle Bronze Age.

Cart-rut sites also abound in the area. A group is located to the south-east of Misrah Ghar il-Kbir, at Ghar Mundu (GR 461676) and may be followed into il-Misrah tal-Mielah (GR 462677), both close to a pair following a direction perpendicular to the ruts near the junction between the Girgenti and Tal-Gholja road (GR 463675). To the south of this area other rut groups may be found and include two pairs to the northeast of the Madliena Chapel (GR 447678) and a number of long ruts at Ta' Zuta (GR 462668). The latter ruts could possibly be connected to other ruts further east along the cliff edge (GR 463666). Only a short trail of around twenty metres at Il-Hmieri (GR 466667) north of

Gebel Ciantar has been found of the claimed connecting trail between the ruts at Ta' Zuta and the long trail found near the shaft and chamber tombs at Ta' San Lawrenz (GR 470673)(Gracie 1954: Fig. 2; Zammit 1928: 19).

From this description of the relevant sites in the area, it is clear that proposing relationships between the Bronze Age settlement and ruts would be an oversimplification for a number of reasons.

The cart-ruts at Misrah Ghar il-Kbir may be followed at the northern side of the nearby valley, Wied ix-Xaghri, and are last traceable in a direction away from the Wardija ta' San Gorg site. If an association had to be made, it is more plausible to link them with the ruts at Ghar Mundu and Misrah il-Mielah, were they may well have been in continuity, any evidence disappearing through extensive quarrying activity at Misrah il-Hawt.

Even if a south-directed projection had to be made of the Misrah Ghar il-Kbir ruts, it would be likely that they would continue along the cart-rut trail at Ta' Zuta, around 300 metres away from the settlement site. Despite a number of field walks no ruts were found connecting the Ta' Zuta cart-ruts and the Wardija ta' San Gorg site. The rut closest to the latter site lies at the neck of the promontory just south and parallel to the road (GR 457670) two hundred metres away from the Bronze Age site. No ruts were found in the vicinity of Ghar Mirdum.

The above considerations reveal that proposing links between cart-ruts and Bronze Age settlement sites in this area would have weak supporting evidence. The presence of quarrying in the vicinity of ruts at Ta' Dun Konz (Magro Conti and Saliba 1999: 38-39) is noteworthy especially when one considers that quarrying may also be observed near ruts found in the vicinity of the Madliena Chapel, Ta' Zuta, Ghar Mundu and Ta' San Lawrenz.

3) Borg in-Nadur

Only a short cart-rut trail may be found today at St. George's Bay (GR 577655), but reviewing the original documentation describing the trails present in this area revealed that the ruts here continued for a considerable distance along the shoreline (Adams 1870: 244). A pair of ruts "running into the sea" were possibly related to the pair observed until a few years ago fifty metres further north, on the other side of the bay (Trump 2000: 95).

Although the author was unable to link the ruts shown by Leith Adams to the Bronze Age settlement, the main problem arises through the concentration of sites in the area. The area around Borg in-Nadur contains remains of the Neolithic, a megalithic temple, dolmens and remains pertaining to the classical period. Assignment of ruts to a particular period in exclusion of others should certainly be approached with caution in this area.

Adams (1889: 249-250) had noted that a particular rut crossed one of the silos on the Birzebbuga coastline. The value of this observation is weakened from the fact that these features remain undated, being only loosely attributed to the Bronze Age (Trump 2000: 95), 'Phoenician' or early Punic (Sagona 1999: 53) and the Middle Ages (Adams 1882: 249-50). Only excavation of intact deposits here may throw light on dating issues for cart-ruts, other than giving valuable information on environmental characteristics and possibly insights into the tilting rate of islands.

4) Misrah Ghonoq

Although the setting at Misrah Ghonoq is typical of a Bronze Age settlement, only a few sherds testify to this possibility (Trump 2000: 144). The original descriptions of the bell-shaped cavity (M.A.R. 1928-29: VI; Vella 1972: 36) interpret it as a tomb, contrasting with the prehistoric interpretations usually assigned to it. Other than the megalithic remains illustrated by Grognet further megalithic remains are present over 900 metres to the west (Sant 1996: 19). Multi-period pottery noted in the debris to the east of Fort Mosta provides further problems into the nature of the remains at this locality

Further problems are also provided by a largely unknown cart-rut pair (GR 486756) (Plate 2) which can be followed for twenty-nine metres and going in an east-northeast direction, descending the slope to the northeast of Mosta Fort. Its upper end terminates abruptly, around fifty metres from the Wied il-Ghasel Hypogeum. The location of these cart-ruts challenges opinions on the barring of rut progress by the cliffs at Misrah Ghonoq.

A final word on this area is at present not possible, as the exact location of the presumed Bronze Age settlement and a relationship with the cart-ruts described is unknown. Unfortunately, further investigations were hindered by failure to get the necessary police permits to explore the area and

inability to retrace Grognet's illustrations at the National Library at Valletta.

5) Ras il-Gebel

Cart-ruts originally described here were already noted to terminate a considerable distance away from the area containing the Bronze Age settlement (Trump 2000: Fig. 18). A field walking survey in the area confirmed this situation (Figure 2). At a turn on the road from Mgarr to the Ghajn Tuffieha Bay a country lane, now bearing the name Sqaq ta' Ciantar, goes towards the Ras il-Gebel plateau. The cart-ruts are found immediately after the turn to the left behind the water reservoir. Just beyond a surface quarry (GR 427766) two long cart-ruts follow a northerly direction, roughly along the rubble wall that crosses the plateau. Back to the above-mentioned surface quarry, further cart-ruts follow the northern side of the country lane, another track following on the left hand side of a west-heading sidetrack. Along this latter sidetrack, a shaft (GR 426765), with evidence of a chamber just visible through the containing rubble, brings home a familiar situation of cart-ruts in close vicinity to Punic/Early Roman tombs. A stretch of curving cart-ruts are found to the southwest of the reclaimed area that now crosses the plateau, a surface quarry located within a few metres away. The area to the west of this reclaimed land is characterised by a flattened step appearance possibly the result of quarrying and markedly different from the more karst-characterised terrain further to the west. A further rut trail (with the 'modern' profile) is found to the north of the deep quarry in the centre of the plateau, and continues within the path leading to a farmhouse in the area. No other trails suggestive of cart-ruts were found on the plateau, although a more detailed assessment of this area is desirable.

Quarrying activity may explain the presence of cart-ruts here, one particular pair more comfortably accounted for as a route to the farmhouse in the area. The ruts in question occur 500 metres and 200 metres away from megaliths attributable to the defensive wall of the Bronze Age settlement.

Reinterpretation

Even when a multiperiod use of cart-ruts is taken into account, the above discussion reveals that there appears little evidence to link cart-ruts to the Wardija ta' San Gorg settlement. While appreciating the limitations of date assignment by proximity, the distance of the cart-ruts from the Bronze Age site at Ras il-Gebel calls for caution in suggesting a link

between the two archaeological features, especially when remains closer to the cart-ruts are reminiscent of a more common situation. The location of the cart-ruts, quarry and settlement on Qala Hill once again may suggest an explanation that moves away from the Bronze Age. The rut-pair recently discovered near Fort Mosta poses new problems to the prehistoric dating, while the repeated use of Borg in-Nadur promontory makes links to the Bronze Age weak.

This general situation finds parallels with other areas containing Bronze Age settlements and ruts, which also have remains belonging to other periods. At Mtarfa and Nadur (Malta), where ruts are alleged to be found near Bronze Age sites (Harrison Lewis 1977: 60), remains of Punic Tombs and other archaeological remains indicate that the areas were used in other periods. Furthermore ruts running towards promontories are not exclusively found near areas containing Bronze Age villages. Hughes (1999: 74) had already contested that temple sites and megalithic remains close to cliff edges suggest that such localities were probably used before the Bronze Age period.

Contrasting with Trump's communication to Hughes (1999: 74), other field finds reveal that the Bronze Age is not always represented where ruts occur on promontories. At Is-Sidra in Qala, Gozo (GR 394789), a long trail may be traced directed to/from remains of rubble constructions at the tip of the promontory. The latter remains, which could be related to the underlying agricultural landscape, contain no evidence for use in the Bronze Age. Excavations here, however, could be revealing. In the same area a short trail follows the footpath to the south. A number of caves may be observed here but beyond their use as animal shelters possibly in the late medieval or early modern period, no earlier use can be ascribed at present.

An unrecorded rut pair follows a faint trail for over fifty metres along the promontory at Il-Qortin tal-Magun (GR 377898). While depressions to the south should be investigated, no evidence for the Bronze Age was noted here. The only remains on site included a small agricultural tenement and a chapel dedicated to St. Philip that has long been lost through cliff falls. Approaching Ras il-Wardija (Gozo) a rut pair was recorded in the sixties (Caprino 1965: 167). Although a Bronze Age use of the promontory was claimed through the presence of these ruts (Buhagiar 1988: 72), nothing earlier than the Punico-Phoenician period was found following extensive excavations of the site. No prehistoric settlements have been documented amongst the megalithic remains known near Ta' Lippija. This is

a promontory close to where Abela (1647: 69) described the Mgarr Barrani cart-ruts. Although the cart-ruts at these four sites cannot be convincingly attributed to a particular period, their location on promontories without Bronze Age remains is noteworthy.

Furthermore, no ruts are recorded near Bronze Age settlements in Sicily and the Western Mediterranean (Pike 1963 as quoted in Evans 1971: 204)

Conclusions

Short of investigations into the late prehistoric activity near Bronze Age settlements together with no secure attribution of ruts to other periods at these sites do not exclude that cart-ruts found in proximity of these settlements were already in use during the Bronze Age. Notwithstanding, when considered in its entirety, the evidence reveals that the occurrence of cart-ruts near Bronze Age fortified settlements is not in itself enough to propose a Bronze Age use of the cart-ruts. Short of revision by more detailed surveys at these sites, the author is of the opinion that in the areas examined more plausible explanations (when possible) could be reached when considering possibilities that do not include the Bronze Age.

Beyond specific dating concerns, failure to come to more definite conclusions was inevitable following problems resulting from the methodology currently used to date the cart-ruts. Much can be achieved if this problem is addressed in the future by further studies, fieldwork and discussions.

Although riddled with immeasurable variables and limitations it is high time for research to consider in the coming years methods that directly date the cart-ruts. A pioneering work studying karst features on cart-ruts has already suggested a long period of use ranging from the second to the tenth century A.D., possibly earlier but probably after 500 B.C. (Drew 1996: 410). Comments on the possibility of a date consistent with that suggested by Abela (Drew 1996: 415) and the paucity of available evidence on the Arab period go a long way to highlight the limitations of indirect dating methods. When the dates proposed by Drew for two main cart-rut sites (i.e. Misrah Ghar il-Kbir and Ta' Alla u Ommu - pers. comm. David Drew 13/11/01) are considered with those suggested from ruts behind the Roman Domus and by the evidence for the use of the Marsa promontory, it may well be that more promising results for dating a number of cart-ruts could be obtained by pursuing research to these periods.

The author cannot but conclude by emphasising that "a final point could well be that a careful assessment of an intractable problem like that of the Maltese cartruts tells us more about archaeology than about cartruts" (Trump 1998: 37). Inspired by such observation, it is hoped that this paper provides another step in a discussion that will hopefully lead to the development of a better methodology or search for new investigative techniques to study this enigmatic but interesting heritage.

Acknowledgements

I am indebted to Ms. Isabelle Vella Gregory for reviewing this paper. Dr. Brunella Bruno and Mr. Nathaniel Cutajar provided information on the artefacts discovered on the Marsa promontory and were kind enough to allow me reproduce part of their results when their paper was still in press. Mr Neville J. Cardona provided information on the location of the Muslim graves in the Rabat site, while Dr. David Drew made his article available during this study. A word of gratitude is extended to Dr. David Trump and Ms. Karel Hughes. Although their opinion on the subject differs significantly from part of what has been proposed above, their suggestions were essential leading to a revision of an earlier version of this work.

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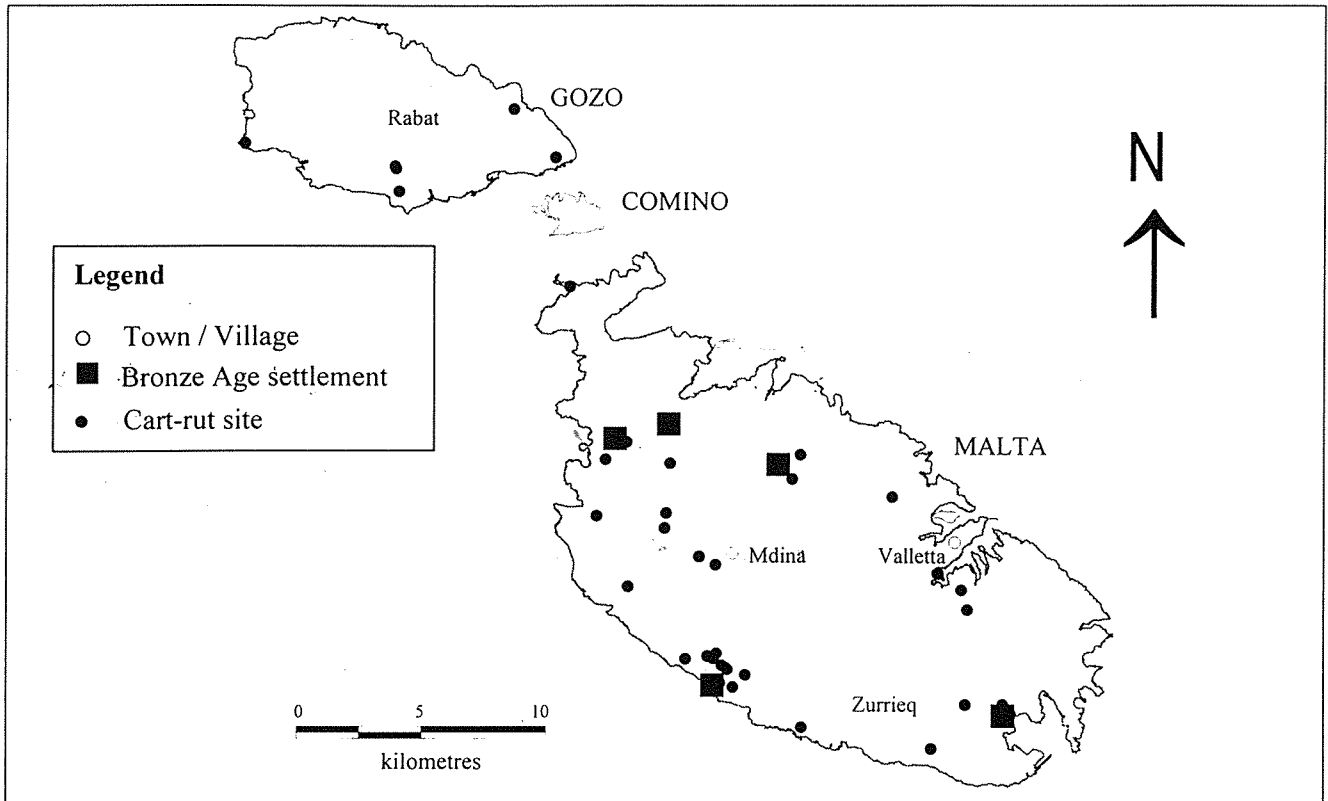


Figure 1: Bronze Age Settlements and Cart-ruts discussed in the paper



Plate 1: Cart-ruts within street behind the Roman Domus, Rabat (Malta)

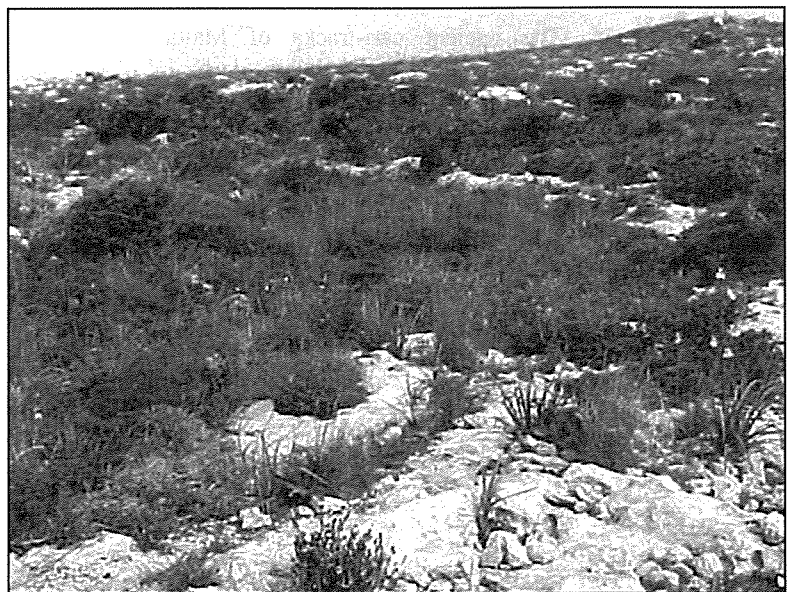


Plate 2: Cart-rut (foreground) and surface quarry (area with a more dense vegetation in background) at Qala Hill, Malta

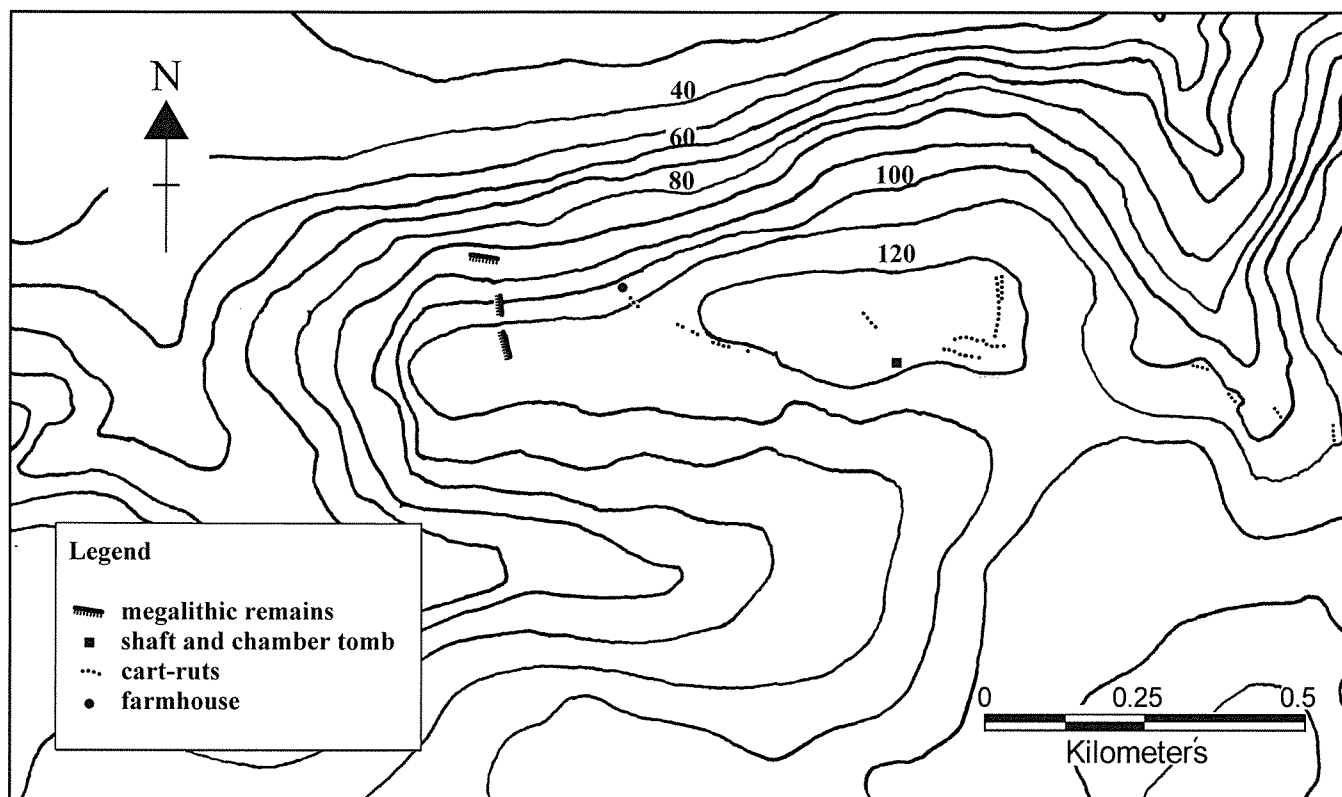


Figure 2: Cart-ruts and Bronze Age settlement at Ras il-Gebel, Malta

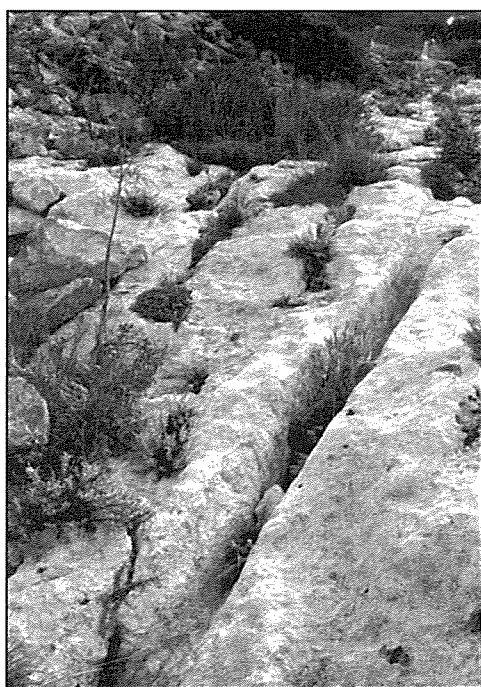


Plate 3: Cart-rut (foreground) to the north of the Victoria Lines near Fort Mosta



Plate 4: Cart-rut (right foreground) on the Ras il-Gebel plateau. Bronze Age settlement is in background.