

DOCUMENTING, IDENTIFYING AND PROTECTING A LATE ROMAN–BYZANTINE FORT AT TABUS ON THE EUPHRATES

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ABSTRACT

A ruined fort rises at Tabus on the north-eastern edge of Jebel Bishri in Central Syria. The fort which is situated c. 25 km north-west of the city of Deir ez-Zor along the road to Aleppo overlooks the Valley of the Euphrates. The fort is roughly triangular in layout covering c. 300 m x 80 m x 100 m. It is connected with a graveyard and two separate towers in one kilometre's distance. The fort obviously belongs to the network of the Roman eastern *limes* and is hardly ever mentioned in encyclopedias of the ancient world. The fort has, however, been associated by early travellers, *inter alia*, with the Alalis of Ptolemy's Geography and the Gothic legionary fort of Helela/Elela mentioned in *Notitia Dignitatum*. The new documentation of the fort by SYGIS -the Finnish archaeological survey and mapping project of Jebel Bishri - is a step towards studying the origins of the fort and to protecting the site. Since 2004, the project has recorded and documented the site with GPS, EDM, GPR and the location has been mapped with a rectified Landsat-7 ETM satellite image. The remains were also photographed, documented on special computerized site data record forms and the potsherds lying on the ground surface were collected. The layout of the fort is reminiscent of the fortress of Zenobia rebuilt by Emperor Justinian on the Euphrates, and the pottery types and stamps offer datings from the Late Roman to the Byzantine era. In order to study the connection of the fort with the nearest Late Roman forts, such as Mambri and Qreiye, we carried out an experimental GIS viewshed analysis to test the intervisibility of the forts and hence elucidate their dating, function and connection. The origins of the fort in its present form seem to date to the Late Roman – Byzantine periods. The inner courtyard of the fort is filled with robbers' pits that would need a rescue excavation. The walls and towers require consolidation, *anastylosis* and conservation to preserve the site for the future. Protection work would need the defining of a buffer zone, closing the fort and building a special high terrace for visitors overlooking the site with its unique landscape.

1. INTRODUCTION

A small ruined fort guards the Euphrates Valley at Tabus on the north-eastern edge of the mountainous ridge of Jebel Bishri in Central Syria (Fig. 1). The fort rises on the southern side of the Deir ez-Zor – Aleppo road, c. 25 km north-west of the city of Deir ez-Zor. Some of its ruined corner towers can be seen from afar protruding from a mound on the mountain edge. Studies concerning the fortress are limited to the observations made by early 20th century travellers and aerial prospections. The fort has earlier been visited by researchers and travellers such as V. Chapot (1907), F. Sarre and E. Herzfeld (1911) as well as A. Musil (1928).

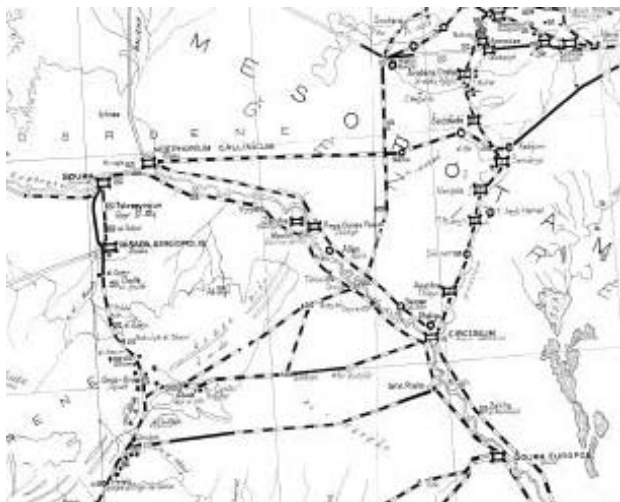


Fig. 1. The ruined towers of a fort at Tabus protruding from a mound at the edge of Jebel Bishri. Photo taken from SW by Minna Lönnqvist.

Sarre and Herzfeld published a preliminary topographic mapping of the site (Fig. 3). The site also appears in A. Poidebard's aerial atlas of the eastern limes based on the prospections and surveys of the 1920s and the early 1930s (Poidebard 1934, Atlas, Carte) (see Fig. 2). The Syrian Antiquities Department has made a trial trench on the western wall of the fort and arranged the guarding of the site. However, the fort is hardly ever mentioned in the modern Roman frontier studies or encyclopedias of the ancient world.



Fig. 2. Poidebard's aerial map (1934) with parts of the Roman eastern frontier including the Strata Diocletiana and the Euphrates with fortresses and forts such as Tabus and roads along Jebel Bishri.

Apart from Sarre's and Herzfeld's travel descriptions, no comprehensive archaeological documentation of the site with its

surrounding ancient remains has been carried out.

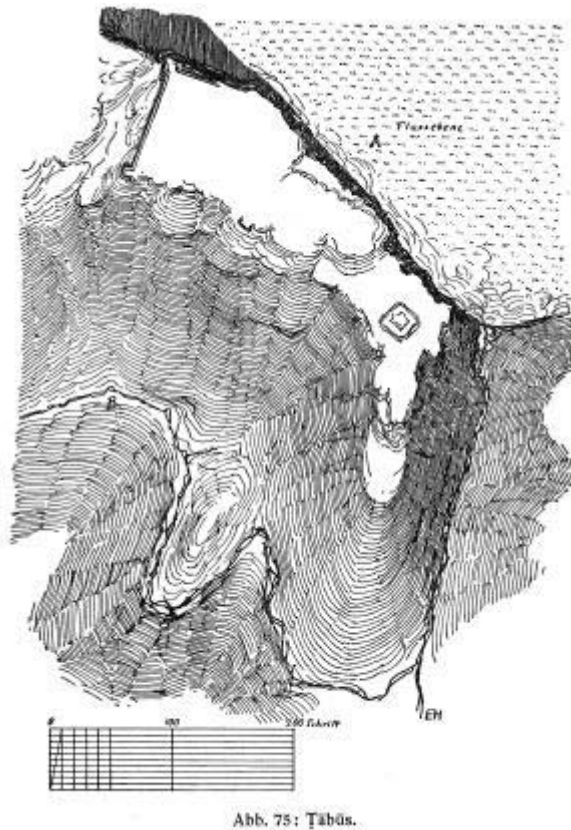


Fig. 3. A topographic drawing of the fort site at Tabus published by Sarre and Herzfeld in 1911.

The corner towers of the fort at Tabus can be detected in the CORONA declassified satellite photographs with a resolution of 2.7 m taken in the 1960s, but the remains are not very recognizable before visiting the area on the ground (see Lönnqvist et al., 2005a in this volume). In the 2004 season SYGIS – the Finnish archaeological survey and mapping project of Jebel Bishri – has recorded, documented and mapped the fortress and its immediate surroundings (Lönnqvist and Törmä 2004, under Tabouz) with modern digital recording including GPS (Global Positioning System, UTM zone 37), EDM (Electro-optical Distance Measurer), a digital compass and digital cameras. GPR (Ground Penetrating Radar) was used for detecting structural features under ground. Mapping has been carried out from the acquired field data and remote sensed data such as LANDSAT-7 ETM satellite images and DEM (Digital Elevation Model) data acquired from the Shuttle Radar Topography Mission (SRTM) 2000.

In addition, manual recording with the computerized site data record forms, field diaries, manual measuring, hand-drawing and black and white photographs as well as colour slides were added to the digital datasets. In our view, the manually documented structural remains, such as stone pavements, receive more variable forms and complement the digital recording. Architectural fragments were recorded and small finds were collected and recorded. All of this gathered data forms the basis for identifying, preserving, protecting the site and planning further research.

The ancient sources, such as Ptolemy's Geography, itineraries, military tabulas of the Roman Empire and architectural accounts by the ancient historian Procopius on Emperor Diocletian's

fortresses and Justinian's rebuilding projects on the Euphrates can elucidate the history surrounding the fort. The comparison with the neighbouring forts can also offer some guidelines for architectural identification and the function of the fort. The site clearly belongs to the network of defences and roads related to the eastern *limes*. Therefore, we wanted to carry out an experimental GIS (Geographic Information Systems) viewshed analysis to elucidate possible connections and strategic functions of the fort in the military organization at the Euphrates border zone. The dating, function and significance can be studied and further discussed in the light of the new basic data brought forward in the present article.

Tell Tabus

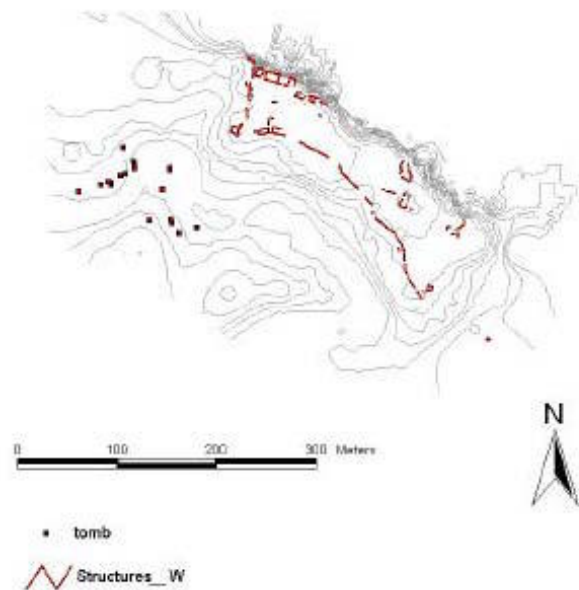


Fig. 4. A map presenting the exposed ruins of the fort, the neighbouring tombs and topographic features at Tabus in 2004.

Map produced from the EDM field data with ArcView program by Jari Okkonen.

The unique velvet-like desert landscape and views opening over the green Valley of the Euphrates are part of the cultural value and context of the monument (cf. the Venice Charter), which is associated with other ancient remains forming a distinct archaeological area of remains from antiquity. The associated structural remains surrounding the fort consist of a graveyard and two separate towers, a dam and two ancient roads at one kilometre's distance. The choice in this article has been to concentrate on the fort, because the roads have been dealt with elsewhere (Lönnqvist et al. 2005a in this volume). This article does not either reflect the actual and whole procedure of the survey as all the periods and remains were equally recorded and documented.

2. THE RECORDING AND DOCUMENTING THE FORT AT TABUS

The 2004 field survey on the Euphrates side of Jebel Bishri was started from an alluvial terrace (see Plateau 1 in Lönnqvist et al., 2005a in this volume) situated between the villages of El Kharita and Mustaha starting c. 23 km north-west of the city of Deir ez-Zor on the southern side of the road leading from Deir

ez-Zor to Aleppo. The alluvial terrace belonging to the piedmont of the mountain formed a natural transect, delimited by the river valley and the mountain. The area was systematically field walked, three kilometres in length and one kilometre in width at 15 m intervals until reaching Tabus with the surrounding hills.

The fort (H 19) is standing at the edge of the Jebel Bishri ridge (UTM 0586948, 3925414, c. 300 m a.s.l.) partly covered by a sandy mound c. 90 m above the eastern alluvial terrace and the fluvial wadi bed. The side of the fort towards the Euphrates is strategically steep and inaccessible. The ruins which cover an area c. 300 m x 80 m x 100 m in size, were recorded on the ground with an EDM and visualized in creating a digital map including topographic features with ArcView program (see Fig. 4). The coordinate location of the site was later mapped on rectified Landsat-7 ETM panchromatic image with ERDAS MapSheets program.

The foundation of the fortress is laid on large marble blocks varying in size c. 0.7–0.8 m x 0.7 m x 1 m (see Fig. 5). The walls are built in a triangular plan surrounding an inner courtyard. There exist three ruined quadrilateral corner towers and one ruined quadrilateral wall tower on the southern wall. The side walls and the corner towers are built of angular smaller marble stones (varying in size c. 0.3–0.4 m) fitted together with mortar and covered by lime plaster with an ashlar masonry surface imitation (see Figs. 6). The main entrance has apparently situated in the western side near the south-western corner tower the ruined walls of which still partly stand preserved from the original. The western wall of the fort has a double-walling system revealed in a trial trench. The wall tower and the double-walling system were clearly defensive measures on the more easily accessible side. Outside and beneath the western wall, there is a ditch which originally seems to have been the moat of the fortress but has largely been filled up with earth accumulating through the centuries.

There is a S-N running small wadi across the mound, dividing the whole fortress in two, so that the eastern tower may have functioned as a guard post. This eastern tower, still visible from the Deir ez-Zor–Aleppo road, was also able to monitor the traffic along the line of the ancient marble-paved road (H 13) that we documented on the terrace beneath (see Lönnqvist et al. 2005a in this volume). The main courtyard of the fortress is filled in with room-like structures or houses, however, no actual streets seem to separate them, and the site represents a citadel-type rather than a *poleis-castra*-type fortress such as Zenobia. Architectural fragments were documented and small surface finds were collected and recorded. Among the architectural fragments, there were parts of cornices and decorated masonry courses with rosettes and egg-patterns. Some architectural fragments from the courtyard clearly represent Palmyrene style in the Classical Greco-Roman order into where palm leaves add an oriental flavour. The collected sherds consist of pieces from globular amphoras, jugs, bowls, cooking pots, small flasks and cups. Cooking pots include typical Late Roman dark black-greyish and grooved examples. The stamped pottery finds have close parallels to the Athenian Agora material from the 5th and 6th centuries AD (cf. Hayes 1972, 351-368). There are also sherds with applied “pie-crust” decorating typical of Byzantine pottery of the 6th century AD (cf. Fulford and Peacock 1984, 168-173).

Several graveyards (H 17, H 18, H 20) with plundered graves were identified to the south-west beneath the fortress on the nearby hills. They were recorded, but only one graveyard (H 17: UTM 0586819, 3925363) could be dated to the period of the fortress. All the opened graves were cut into limestone bedrock.



Fig. 5. Recording the large marble foundation blocks of the fort, the scene beyond opens westward to the Valley of the Euphrates. Photo: Eivind Seland.



Fig. 6. The still partly standing south-western corner tower of the fort taken from the SW. Photo: Minna Lönnqvist

One family tomb (H 17: 8) with a shaft entrance had a central burial chamber (6 m x 6 m) flanked with nine niches or *loculi* and two wall *arcosolia*, typical of Late Roman and Byzantine rock-cut tombs. In the central chamber, there was an empty sarcophagus. The walls had faded traces of paint. No associated pottery was encountered. We had earlier, during the season 2000 survey, identified two similar Late Roman tombs from the western piedmont area of Jebel Bishri. They are B1 (UTM 507596, 3886103) and B2 (UTM 504815, 3884501) in the neighbourhood of wadi Suq, especially B1 with three *arcosolia*, resembles the family tomb recorded in the graveyard of Tabus. These tombs in the west were clearly connected to the structures of the *Strata Diocletiana*.

Two separate towers (H 21: UTM 0586457, 3925596 and H 23: 0586109, 3925467) are standing at the edge of the mountain, one kilometre's distance to the west of the main fort and are clearly associated with it. Sarre and Herzfeld (1911) suggested that they are tombs similar to the tower tombs of Palmyra and those of Zenobia, but their ruined state does not allow an identification like this. However, their location would suggest security rather than a funerary purpose.

3. THE PROBLEM OF IDENTIFICATION

3.1 Architectural and Archaeological Comparison

We have compared the neighbouring forts and fortresses, such as Qreiyeh and Zenobia, their structure and layout with the fort at Tabus. Zenobia, is located on the peninsula of Halabiya 28 km north-west and Qreiyeh at Ayyash, 16 km north-east of Tabus. Mabri, situated at Tibne 20 km north-west of Tabus, cannot be architecturally or archaeologically compared as its structures are unexcavated, buried deeper in a tell. Qreiyeh, which is currently under excavation, follows the plan of a square Roman military camp (see Poidebard 1934, Atlas, Pl. LXXXVII) and is not comparable in its layout, building materials, techniques and round corner towers with the fort at Tabus. Architecturally, the buildings of Qreiyeh are dated to the 2nd and 3rd centuries AD (see <http://www.dainst.org/print.php?id=742>). The closest parallel for the fort at Tabus in the Euphrates *limes* region is the fortress of Zenobia with its triangular layout and quadrilateral wall and corner towers. Even in ruins, it has walls and towers still partly standing (see Poidebard 1934, Atlas, Pl. LXXXIV). According to the historian Procopius (Buildings II, viii, 8-9), Zenobia was originally built by the Queen Zenobia of Palmyra in the 3rd century AD but rebuilt by the Emperor Justinian I in the 6th century AD. Some architectural fragments at Tabus could also indicate that the site was already in use during the heyday of Palmyra in the 2nd or 3rd century AD as a border station against Parthia and was later rebuilt against the Persians. The location and structure of the fort at Tabus indicate a guard post and defensive military base rather than a fortified town. Outside the eastern *limes*, the Byzantine castle of Redina is the closest parallel known to us with its triangular plan and quadrilateral towers as well as its location on a ridge overlooking and protecting the Via Egnatia, a major highway (see Moutsopoulos 1983, 86-99). Zenobia, however, in the form as rebuilt by Justinian is much larger (c. 385 m x 350 m x 550 m) than the fort at Tabus and is actually a fortified town with streets, a forum, a praetorium, basilicas and baths (Lauffray 1983-1991; Kennedy and Riley 1992, 117-118). Another much larger building operation by Justinian along the same line is Rasafa-Sergiopolis, c. 147 km to the west and another is Circesium, c. 56 km to the east. Circesium was originally built by Diocletian and rebuilt by Justinian. Procopius mentions that Circesium had foundations of large hard stones (Procopius, Buildings II, vi, 6-8) as is also the case at Tabus (see Fig. 5). At the fortresses of Rasafa-Sergiopolis and Zenobia, limestone, gypsum and some bricks are used as building material, but at Tabus we only found marble and lime plaster obviously based on gypsum. The double-walling system, present at Tabus, is a typical feature of the Justinianic fortresses.

Quadrilateral towers were especially preferred in Byzantine structures, and the towers had several functions: guarding, signalling, storage and as final resorts. Towers were erected in Syrian villages in the 4th century and in border areas of active confrontations in the Byzantine period. (Isaac 1990, 179, 186). From the architectural evidence and associated pottery, it can be inferred that the fort at Tabus, in its present form, dates from the

Late Roman - Byzantine period.

3.2 Ancient Historical Sources

Tabus has, *inter alia*, been identified with Dabausa mentioned in Ptolemy's (AD 90-168) Geography (V, 17; see Chapot 1907 reporting Sachau's original identification). Others, like A. Musil (1912, 236), identified it with the Alalis mentioned by Ptolemy. Alalis is situated on the way from Sura to Babylon (Ptolemy's Geography V, 14). The *Tabula Peutingeriana*, originally dating to the 4th century AD, unfortunately does not take its description as far as to Tabus on the Euphrates (see, e.g., Levi and Levi 1967). The military tabulas of the *Notitia Dignitatum* mention under Dux Syria sub Eufrentensis Syriae, a site called Elela which is the post of the Cohors Prima Gotthorum (Helela). The *Notitia Dignitatum* has been connected with the 392 military reorganization and the birth of Byzantium, and barbarian Gothic legions started serving in the eastern Empire. Musil (1928, 236) suggested that the Elela mentioned in the *Notitia* should be the Alalis of Ptolemy's Geography. However, Poidebard identifies Elela/Helela with Hlehle, situated between Palmyra and Shukhne, south-westward of Jebel Bishri (Poidebard 1934, Atlas, Pl. V). As far as the location of Tabus is concerned, Ptolemy's list offers a more secure identification with the Alalis on the way from Sura to Babylon as a site among the towns near the Euphrates. The dating associated with Ptolemy's information seems to be early (2nd century) compared to the structures and associated small finds at Tabus. Therefore, the identification with the Alalis has to remain provisional before any new excavations have been carried out at the site or other further evidence is acquired. The fort with its architectural rebuilding or reconstruction phases are more likely to date from the 3rd to 6th centuries AD. This, however, does not mean that the site could not have already served as a Palmyrene guard station in the 2nd century as it is known that the power of Palmyra reached to the Euphrates to guard its caravans and secure the Parthian frontier.

4. THE GIS VIEWSHED ANALYSIS

4.1. Testing the Connection of the Fortresses

The function of the fort at Tabus is apparently military, serving as an auxiliary defence base. To further study the date of construction and original function of the fort, we decided to carry out an experimental GIS viewshed analysis, which was executed by Markus Törmä, Lic. Sc. (Tech.). The eventual visibility between the neighbouring forts of Mambri, Tabus and Qreiyeh (see the distances in paragraph 3.1.) would offer some indication of their contemporaneous and functional defence purposes in the Late Roman and Byzantine periods. This visibility would not, however, mean that the forts were contemporaneously erected, but that at some point, they could have functioned together. Both Mambri (UTM 574179, 3941645, c. 231-235 m a.s.l.) and Qreiyeh (UTM 596177, 3920938, c. 228 m a.s.l.) in the Valley of the Euphrates date to Late Roman times and are much lower compared to the fort of Tabus (c. 300-310 m a.s.l.) although including the original towers. Tabus between them on a cliff, could have functioned as a relay station, if there was visibility between the forts.

As earlier mentioned, Mambri was built by the Emperor Diocletian. Qreiyeh was abandoned at the same time as the Parthian invasions of Dura Europos in the 250s AD, but it may have been used as a guard and signal post later on. For example, later activities are represented at Qreiyeh in the collected surface pottery from the later Roman and Byzantine times (cf.

<http://www.dainst.org/print.php?id=742>). Thus, the forts of Mambri and Qreiye were not built during the same centuries, but their use may have continued contemporaneously from the 4th century AD onwards.

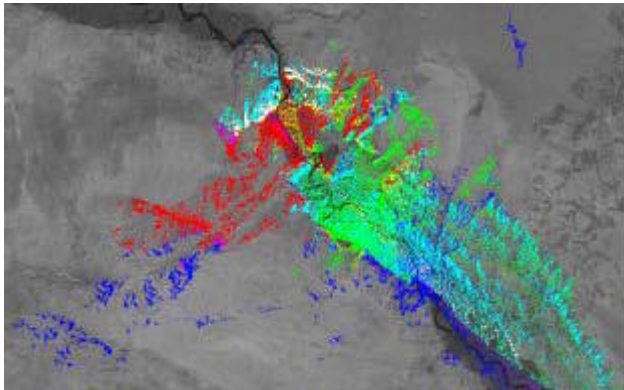


Fig. 7. The visualization of the viewshed analysis executed by Markus Törmä, Lic. Sc. (Tech.).

4.2 The Technical Details of the Viewshed Analysis

The viewshed analysis (Fig. 7 and Table 1) is based on the DEM tiles covering the area, the height and the coordinate information of the sites. The Shuttle Radar Topography Mission (SRTM) provides a DEM at resolution levels of 30 and 90 m covering the earth between latitudes 60N and 57S measured in February 2000. The DEM is constructed using synthetic aperture radar (SAR) interferometry, meaning that two radar images have been taken from slightly different positions and the surface height is determined using phase differences between images. The SRTM-DEM with 90 metre pixel size was acquired from Global Land Cover Facility (URL <http://www.landcover.org>) which is the web-server at the University of Maryland providing earth science data and products to help everyone to better understand global environmental systems. Primary data and products available at the GLCF are free (www2). SRTM-DEM was downloaded as WRS-2 tiles (paths 171–173 and rows 35–36) in GeoTiff format and pieced together. The DEM was measured using two frequencies (C- and X-bands) (Rabus et al., 2003). C-band data with 90 metre pixel size was used in this study. WGS84 is used as a horizontal and vertical datum. This means that ellipsoidal heights are provided (www1).

PCI Geomatica 9.1 SEENARE-function determines which pixels in a digital elevation model can be seen from a view point defined by X, Y, Z-coordinates. The viewpoints were the forts of Mambri, Tabus and Qreiye at the edge of the Euphrates Valley. Coordinates for the forts were determined using maps and higher resolution Landsat-7 ETM panchromatic image. Possible error sources of the viewshed analysis are:

- large pixel size (90m) of SRTM-DEM
- heights of the view points were 15 meters above DEM surface so the resulting view area is larger
- SRTM-DEM positional and height errors
- coordinate match between SRTM-DEM and GPS

4.3 The Intervisibility of the Fortresses

The results of the viewshed analysis are presented in Figure 7. The background for the visualization is a Landsat-7 ETM panchromatic image taken 29.1.1999. The image is referenced to the same coordinate system as SRTM-DEM and averaged to 90 metre pixel size. The colour corresponds to the areas seen

from different forts, the idea being that the areas seen from Mambri are presented as red, Tabus green and Qreiye blue. Other colours mean that the place can be seen from two or three forts (Table 1).

	Mambri	Tabus	Qreiye
Red	x		
Green		x	
Blue			x
Yellow	x	x	
Magenta	x		x
Cyan		x	x
White	x	x	x

Table 1. The dispersion of the colours presented in the viewshed analysis (Fig. 7).

Thus it is possible to see, how Tabus could have functioned as a relay station for signalling (white) between Mambri and Qreiye, and it offered intervisibility both with Mambri (white and yellow) and Qreiye (white and cyan). The intervisibility with Mambri is based on the hypothesis that the structures were originally high. In the experiment, the 15 m higher level from the digital elevation model from the actual earth surface would therefore include high towers and rising smoke signals. Other means of communication could have been glass and metal, e.g., between Tabus and Qreiye which are nearer to each other than Tabus and Mambri.

5. CONCLUSIONS

The recording, documenting and mapping of the ancient fort at Tabus is the first step towards its protection and preservation. From the available evidence, it is apparent that the fort, in its present form, originally dates to the Late Roman–Byzantine period. When exactly and by whom it was erected is difficult to judge, but our study points to different building and use periods from the 3rd to the 6th centuries AD. Possible builders and rebuilders are the Emperors Diocletian and Justinian. If the site is identified with the Alalis mentioned in Ptolemy's Geography as on the way from Sura to Babylon, the site may already have functioned as a guard post for Palmyra on the Euphrates frontier in the 2nd and 3rd centuries AD. This dating would find support from our viewshed analysis through the intervisibility with Qreiye, but because Qreiye also offers some evidence of later occupation no definite conclusions can be drawn. It is likely that the station served during Diocletian's reign in connection to Mambri and was linked with Diocletian's border policy in general. Whether it was the Gothic legionary base of Elela/Helela later in the 4th century AD, is difficult to judge as Hlela between Shukhne and Palmyra is an obvious rival. The large and final rebuilding operation seems to have taken place in the Byzantine period under Justinian during the 6th century AD. The large marble foundation blocks, the triangular shape, the quadrilateral corner towers and the double-walling system seem to follow Justinian's building projects and the Byzantine metaphysical ideals of fortifications with towers. The fort also could have not only secured the line of defence and functioned as a relay between Mambri and Qreiye, but also assisted the larger fortresses of Zenobia and Circesium rebuilt by Justinian on the Euphrates.

The courtyard of the fort at Tabus is punctuated by robbers' pits as are the nearby graveyards. The structures would need an urgent rescue operation: excavation and cleaning of the robbers' pits, *anastylosis* of the fallen architectural features and tower

structures as well as consolidation of the structures for the future. The plaster covered stonewalls should be conserved and the deterioration stopped in regard to the local sandstorms. The courtyard of the fort should be closed, continuously guarded and a platform for visitors would be needed to see over the courtyard without entering into it. A digital model and architectural reconstruction of the ruins would be useful, and the buffer zone for protecting the ancient area should be planned, taking into account the landscape as a part of the cultural heritage attached to the monument.

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