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**The Southwest Palmyrena in Roman period.
Patterns of land exploitation and territorial management.**

DOTTORANDA:
PAOLA MIOR

RELATORI:
Dr. **STEFANO MAGNANI**
Prof. **DANIELE MORANDI BONACOSSÌ**

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Preface: aims and questions

Several premises lie beyond this research. Firstly, I felt the necessity to overcome the common “Palmyro-centric” idea among modern scholarship (both historical and archaeological) and look instead at its hinterland, i.e. the Palmyrena. In fact, the oasis of Palmyra has been studied principally in its function as an important caravan city, detached from its territorial and regional context, and seen instead as part of a supra-regional socio-political, economic and cultural system. On the other hand the hinterland has never been the object of systematic and intensive archaeological research with the only exception being the exploration conducted in the 1930s by Daniel Schlumberger to the northwest. In an opposite direction, then, my main question has been if Palmyra in Roman time was really an oasis in the middle of a desert, whose history, limited to the 1st-3rd century A.D. was related only to the long-distance caravan trade with Persian Gulf and India. Secondly, I also wanted to overcome the “Romano-centric” classical view. It was common until recently to consider visible ancient remains in the region as strictly a product of the Roman period. However, in areas such the Near East, sites are likely to have been occupied repeatedly during the centuries and buildings to have been repaired much later or re-built using earlier materials. In these circumstances, an autoptic survey can be misleading. Only systematic excavation can provide a factual chronology. This has been especially the case in relation to the Islamic period. It was generally believed that any extensive occupation and cultivation on the desert fringe areas was brought to an abrupt end by Arab conquest in the 7th century A.D., however in the last decade scientific surveys and excavations have shown a certain continuity at least for the Omayyad period. A change in the scholarship’s direction was already inaugurated in 2009 with the start of the Palmyrena Project. Following Schlumberger’s work, this four years Syrian-Norwegian (University of Bergen) research project aimed to study the Northwest Palmyrena and its relationship with the oasis in a long-term perspective (pre-classical and classical periods).

Bearing in mind these premises, I conceived my own research as a study on the role of the Southwest Palmyrena in Roman time with a long durée (from the 1st to the 7th century A.D.) approach, both in terms of city-hinterland economic and social interaction and of regional, but also supra-regional, connectivity. My analysis was limited to a precise area that, when I submitted my PhD proposal (November 2010), corresponded to that in concession to the joint Syro-Italian mission “Palmirena, Missione archeologica”. This geoarcheological survey, started in 2008, was carried out in cooperation between the University of Milano and Udine (Italy) and the Directorate General of Antiquities and Museums (Syria); it was directed by Prof. M. Cremaschi (University of Milano) and co-directed by one of my supervisors, Prof. D. Morandi Bonacossi (University of

Udine), and dr. Michel Al-Maqdissi (DGM Damascus). Its goal was to investigate the environmental changes and the cultural dynamics of this region from prehistory to recent times through the survey of archaeological sites and their environmental context. The project aimed to study the settlement and land use patterns in the semi-arid region of the southwestern Palmyra desert and to trace the changes in the cultural dynamics that occurred in the area from the Upper Pleistocene to the Late Holocene. Palaeoenvironmental research also included the reconstruction and dating of the desert margins variations and of the nucleation process of the Palmyra oasis.

Hence, the original purpose was to take active part during the surveys in order to obtain systematic and scientific data on the entire region for the first time. However, due to ongoing Syrian civil war, the last campaign was carried out in 2010. Without having the possibility to conduct a personal survey I was then forced to switch my research focus from a field survey to collecting historical, epigraphic and cultural data from published material (with all related problems) and to combine them with preliminary results acquired during previous campaigns.

Methodologically speaking I have combined different sources in order to provide firm evidence for the analysis as much as possible. Literary and epigraphical ones have been complemented and/or supplemented by archaeological data. These data have been collected starting from 19th century travellers' reports to (few) contemporary scientific surveys and excavations. I have also tried, as much as my historical formation allowed me, to make extensive use of "new" archaeological tools such as satellite images, mainly declassified CORONA images and Google Earth. Despite all their advantages, these important new instruments are not intended as a substitution for (hopefully) future field works but only as their premises. Furthermore, whenever the lack of evidence required, I have made comparisons with other environmental and historical data of similar but more systematically studied areas of the Near East.

To conclude, the present research, rather than being a final stage has to be considered a starting point. My aim is to provide a scientific and comprehensive analysis of the data available, which can be the base, for what I hope, will be future field works.

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List of Abbreviations

- ANRW* *Aufstieg und Niedergang der Römische Welt. Geschichte und Kultur Roms im Spiegel der neuer Forschung*, edited by Vogt. J. H. Temporini and W. Haase, Berlin, 1972-.
- ARM* *Archives royales de Mari*, edited by A. Parrot, G. Dossin, Paris, 1950-.
- BAtlas* *Barrington atlas of the Greek and Roman world and map-by-map directory*, edited by R.J.A. Talbert, Princeton, 2000.
- CIG* *Corpus Inscriptionum Graecarum, auctoritate et impensis Academiae Litterarum Regiae Borussicae*, edited by A. Boeckh, Berolini, 1828-1877.
- CIL* *Corpus Inscriptionum Latinarum, consilio et auctoritate Academiae litterarum regiae Borussicae editum*, Berolini, 1863-.
- CIS* *Corpus Inscriptionum ab Academia Inscriptionum et Litterarum Humaniorum conditum atque Digestum*. Parisiis, 1881-1962.
- FrGrHist* *Die Fragmente der griechischen Historiker*, edited by F. Jacoby, Berlin-Leiden, 1923-1958.
- IGLS* *Inscriptiones graecae et latinae de la Syrie*, edited by L. Jalabert, R. Mouterde, Paris, 1927-.
- IGLS XVII* *Inscriptiones graecae et latinae de la Syrie*, tome XVII, Fasc. 1, edited by J.B. Yon, Beyrouth, 2012
- IGRR* *Inscriptiones Graecae ad Res Romanas pertinentes*, edited by R. Cagnat, 3 voll., Paris, 1911-1927.
- ILS* *Inscriptiones Latinae Selectae*, edited by H. Dessaud, 3 voll., Berlin, 1982-1916.
- Inv.* *Inventaire des inscriptions de Palmyre:*
- Inv. 1-9 : *Inventaire des inscriptions de Palmyre*, edited by J. Cantineau, Beirut, Vol 1-9, 1930-1936;
Inv. 10 : *Inventaire des inscriptions de Palmyre*, edited by J. Starcky, Vol. 10, Damascus, 1949;
Inv. 11: *Inventaire des inscriptions de Palmyre*, edited by J. Teixidor, Vol. 11., Beirut, 1965;
Inv. 12: *Inventaire des inscriptions de Palmyre*, edited by A. Bounni, J. Teixidor, Vol. 12, Damascus, 1975.
- OGIS* *Orientalis Graeci Inscriptiones Selectae*, edited by W. Dittenberg, 2 voll., Leipzig, 1905.
- PAT* *Palmyrene Aramaic Texts*, edited by D.R. Hillers, E. Cussini, London, 1996.

*PIR*²

Prosopographia Imperii Romani Saeculi I, II, III, 2nd edition by E. Groag,
A. Stein, Berlin-Leipzig, 1933-.

Chap. 1. Introduction

1.1. The geographical and chronological limits

Notwithstanding the importance of the desert region surrounding Palmyra for the economic development of the oasis and especially of the great caravan city of the classical period, the Palmyrene hinterland has never been the object of systematic and intensive archaeological researches, with the only exception of the explorations conducted in the 1930s by Daniel Schlumberger to the northwest.¹ The site of Palmyra has been studied principally in its function as an important “caravan city” detached from its territorial and regional context; seen instead as part of a supra-regional socio-political, economic and cultural system.²

Until nowadays a proper geographical definition of the Southwest Palmyrena does not exist. The limits of the examined area will be therefore defined, at least for the northern part, “in negative”, i.e. the boundary is represented by the region surveyed by Daniel Schlumberger.³ My area of interest, including the Ad-Daw depression, is delimited by the NE-SW oriented mountains of the Jebel Abyad (1330 m) and Jebel as-Satih (1225 m) and behind them by the higher range of the Jebel Abu Rujmayn (1354 m).

Scholars agree on locating a definite southern border for the Palmyrene territory at Qasr al-Heir al-Gharbi,⁴ around 60 km southwest of Palmyra, along the road toward Damascus. Indeed, a boundary stone limiting the Palmyrene territory from the Emesa's has been found there.⁵ However, the inscription itself, as well as all other Roman archaeological remains, is not *in situ* but has been reused in the Omayyad castle's wall.⁶ Therefore, there is the possibility that the site was not the actual border between the two cities.

A more defined territorial limit was demarcated further north, roughly seventy-five km northwest of Palmyra at Khirbet al-Bilaas, which lays along the road from Palmyra to Apamea at the northwest edge of the Jebel Chaar and Jebel Bilaas. A column discovered at the site bears three separate inscriptions, one of which refers to a rescript by Creticus Silanus, *legatus Augusti pro praetore* of Syria in A.D. 11-17, who established the “limits of the Palmyrene territory” (*finis regionis*

¹ Schlumberger 1951.

² Morandi Bonacossi, Iamoni, al-Maqdissi 2011

³ Idem.

⁴ Possibly the *Heliaramia* of the *Tabula Peutingeriana*. See chap. 5.4.2.2.

⁵ *AE* 1939, 180 = Schlumberger 1939b, 63-64 = *IGLS* V, 2252: *Fin[es] inter Hadriano[s] Palmyrenos et [He]mesenos. Emesa*, or modern Hama, lays c. 150 km west of Palmyra.

⁶ Schlumberger 1939b, 43 and Genequand 2006a, 272 for the other *spoliae*.

Palmyrenae).⁷ The boundary was later re-assessed during the reign of Antoninus Pius (A.D. 153). It is however unclear to what city the adjoining territory belonged, maybe *Emesa* or *Apamea*.⁸ In the south, there are no boundary stones indicating the limits of the Palmyrena, as indicated by Genequand: «Sa limit sud, comme dans l'Antiquité, se perd dans le desert».⁹ The same situation appears for the east and southeast borders of the Palmyrena: there are no boundaries stones and we have only a vague reference to territorial limits in two Palmyrene inscriptions. One was found near the Euphrate valley (south of Dura Europos) in the vicinity of the Iraq Petroleum Company Station T-1. This undated inscription reads: «May Abgar be remembered, son of Shalman son of Zabdibôl, who came to the end of the boundaries when Yarhai was *strategos*».¹⁰ More important is another undated inscription from the Qa'ara depression, around 200 km southeast of Palmyra, which identifies a group of “reapers” or “storemen” with a certain Abgar, son of Haïran, at the “borders”.¹¹ For Smith these two texts imply that the eastern boundaries were real and not, as suggested by Matthews, that no territorial boundaries existed to the east of Palmyra.¹² The Palmyrene would have sought there only to command strategic resources, such as water, and their associated settlements.¹³ Therefore, my choice of comprehending or not certain localities is based on the fact that these sites, mostly Roman forts, appeared to be under or related to the Palmyrene control. Encompassing the south-west part of the Sebkhât al-Mouh and the forts of al-Bakhra, al-Bazzurye and al-Sukkarye,¹⁴ the sites included those on the northern (but before the Jebel Woustani) and southern slopes the Jebel Rawaq (before the Jebel Abtar), i.e. the forts of the so called *Strata Diocletiana*, down to Khan Abou Shamat.

⁷ *AE* 1939, 179 = Schlumberger 1939b, 58.

⁸ For a discussion on the boundary stone and its possible attestation of a Palmyrene revolt see Schlumberger 1939b; 1939c, 254-255; Isaac 1990, 108; Teixidor 1993, 97; Bru 2011, 20-22.

⁹ Genequand 2004b, 4, referring to Islamic period.

¹⁰ Starcky 1963, 47-50.

¹¹ Teixidor 1963, 33-46; Teixidor 1984, 25; Mathews 1984, 162-163. Yon 2002, 128, n. 248 and Meyer 2014 (forthcoming).

¹² Smith 2013, 4.

¹³ Matthews 1984, 163-164.

¹⁴ Actually, at al-Bazzurye and al-Sukkarye no milestones have been found but both of these forts were strictly related to al-Bakhra that was a stop along a section of the *Strata Diocletiana*, as attested by three milestones found there (Cfr. Chap. 5.4.3.3).

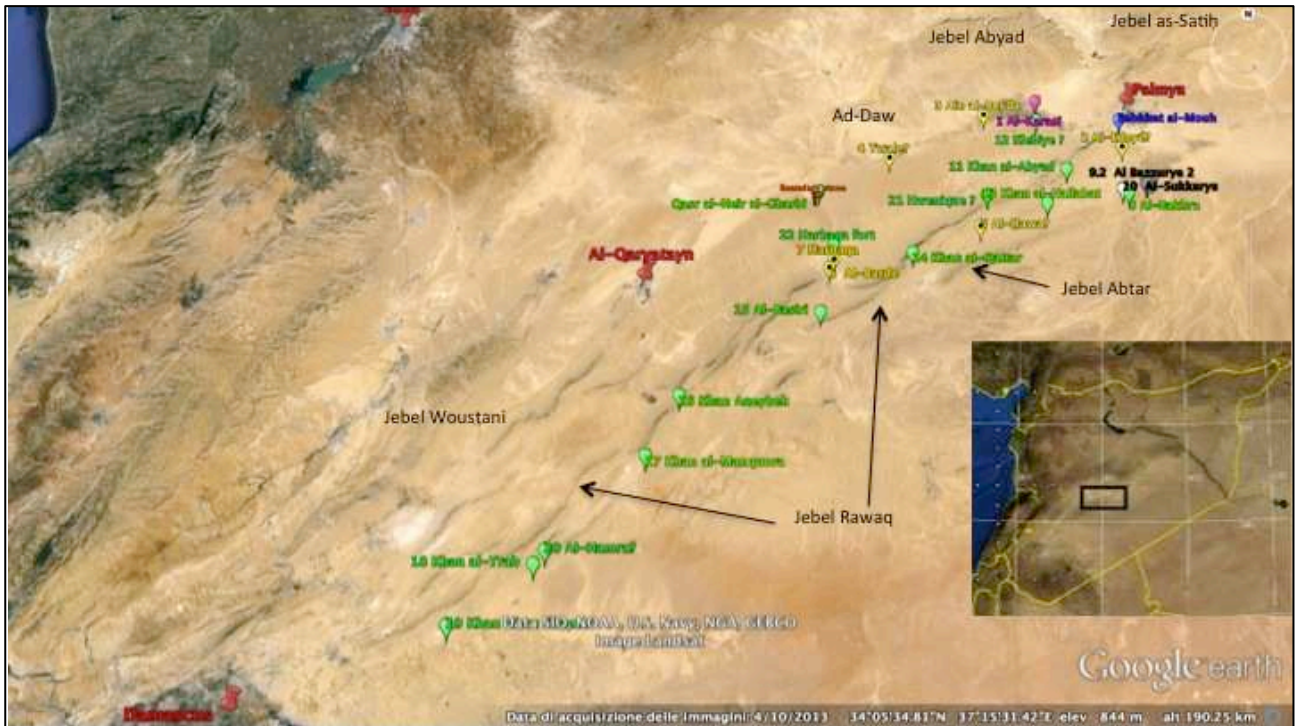


Fig. 1.1. The limits of the area.
(Image produced from Google Earth)

The area coincides approximately with the one surveyed by the joint Syro-italian project “Palmirena, Missione archeologica”.¹⁵

For what it concerns the chronological brackets, my research will focus on the Roman time. I use the word Roman here, not so much as cultural shorthand but as a chronological bracket. With no general consensus on dividing between “Roman” and “Byzantine” period,¹⁶ I intend here to use the term “Roman” for the entire period from the Roman annexation in 64 B.C. to the Battle of Yarmouk in A.D. 636, when the region was lost to the Roman empire and became prize for the Muslim Arab armies.¹⁷ Then, I will internally divide this long period between Roman Republic (down to 27 B.C.), Early Empire (27 B.C. – A.D. 284) and Late Antiquity (A.D. 284-636), only for clarifying purposes.

However, the present analysis will also take in consideration both the earlier Hellenistic period (3rd-1st century B.C.), and the following Islamic time. This because many archaeological sites studied presented no interruptions or simply a requalification until the Omayyad period (A.D. 661-750) included, raising, as we will see in the next chapters, many issues about their chronological attribution.

¹⁵ It extends actually further south. Cfr. chap. 2.4.2 for more information about the survey.

¹⁶ Cameron 2012, 6-7.

¹⁷ For a more detailed discussion over the *long durée* concept and its implications in the Near East I refer to Cameron 2012, 168-214.

1.2. Geography and geomorphology of the area

From a geological point of view, the entire region of Palmyra is located in an intermediate zone between the recent plissé chains forming the large arch of the Taurus and Zagros (N-E) and the Arabian plateau, (S-E). The Palmyrene mountain ranges occur in the form of narrow anticlines, with faults. Branch of the Anti-Lebanon and the Qalamoun, these chains, arranged as an arch, extend generally in a S-W/N-E direction, up to the Euphrates, through the Jebel Bishri.¹⁸

Tectonic movements continue still today and together with strong aridity facilitate the formation, into synclinal cuvettes, of closed depressions that are characteristic of arid areas but also in regions that are more humid, as at Jayrud. The general structure, similar everywhere, associates reliefs, foothills and closed cuvettes. The reliefs appear in form of limestone or marble rings, with steep barren slopes that break off rocky banks and sectioned by recessed valleys. At the feet of the rings, vast foothill slopes cut the local rock covered with a layer of spanned stones. Shaped by flows of layers generated by the reliefs, these slopes are concave in profile with strong inclination at the beginning that diminishes rapidly downstream. Channels carved them. Beyond these slopes, the “spreading” area of a concave and gradual profile and with deposits increasingly thinner towards the valley (sand and then silt) gradually starts. At the end, the bottom of the depression is occupied by a *sebkhat*, a vast clayey plain, salty and lacking in vegetation, where winter runoff water gathers and where salt is harvested during the years.¹⁹

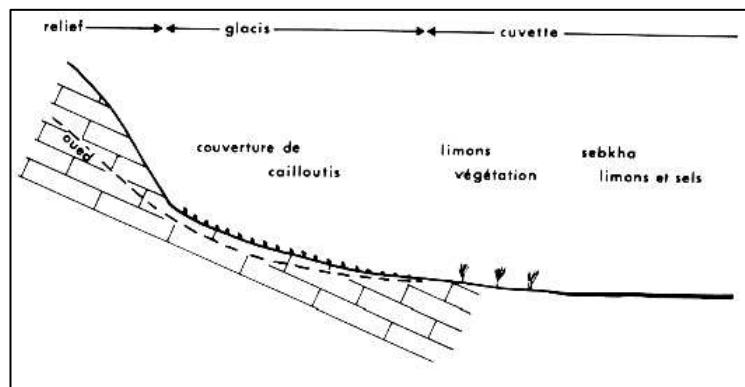


Fig. 1.2. Relief disposition within the endorheic cuvettes of Palmyrena region.
(Sanlaville, Traboulsi 1996, Fig. 2)

This geological structure that can be observed at deserts margins, both in Syria and Jordan, is particularly characteristic of the vast depression of Palmyra, occupied by a large *sebkhat* of *c.* 330 m², situated 364 m above sea level, which is flooded during winter and whose saline has been

¹⁸ Geological Map of Syria, sheet I-37- XIV and I-37-XV. Souliidi-Kondratiev, 1966.

¹⁹ Sanlaville, Traboulsi 1996, 29.

exploited since ancient times.²⁰ The Jayrud's cuvette, S-E of Palmyra, is of the same type while El-Kown's depression, N-E of it, presents a more complex situation. In fact, it is not a closed system since two *wadis* (Fataya at east and Ouaij at west) "escape" it, going northward in the direction of Resafa. Consequently, only part of the waters flows into the *sebkhat's* basin and due to uninterrupted wind erosion, salt fails to accumulate.

Finally, parallel to the depression of Palmyra but considerably higher, the vast hollow of Ad-Daw (180 km W-E/80 km N-S),²¹ displays another kind of endorheic cuvette: although numerous *wadis* that come from the surrounding mountains (even up from the Anti-Lebanon) flow therein, any form of *sebkhat's* deposit is formed, despite some flooding in ground layers. This circumstance is probably caused by the rapid infiltration of waters in the substratum that, instead, go to feed the sources of the Palmyra's oasis. The latter, hot and sulphurous, let's emerge waters precipitated on the Cretaceous limestone massifs that have flowed deep underground in bituminous layers where they were heated and mineralized.

1.3. Climatic and environmental features

1.3.1. Precipitations

Subjected to a Mediterranean climate, more and more deteriorated heading eastward and south-eastward, the Syrian region is divided into two unequal parts by 250 mm isohyet which separates, theoretically, the limits between dryland farming and irrigated agriculture. Due to latitude, relief and proximity of the Mediterranean Sea, the northern and western regions receive enough rainfalls to grow crops without irrigations systems also because considerable water reserves are collected there. The western mountain ranges act as a barrier to humid winds coming from east: if they receive a lot of rain, just beyond, precipitations decrease very quickly to give way to an arid climate.²²

²⁰ See chap. 4.

²¹ The total surface reaches 8,000 km² (Hammad 2010, 5).

²² Sanlaville 1990, 4; Metral, Sanlaville 1979, 230. Damascus and Nebk, that are still located 1325 m above the sea level on the eastern slope of the Anti-Lebanon, receive already only 210 and 180 mm of annual rainfalls.

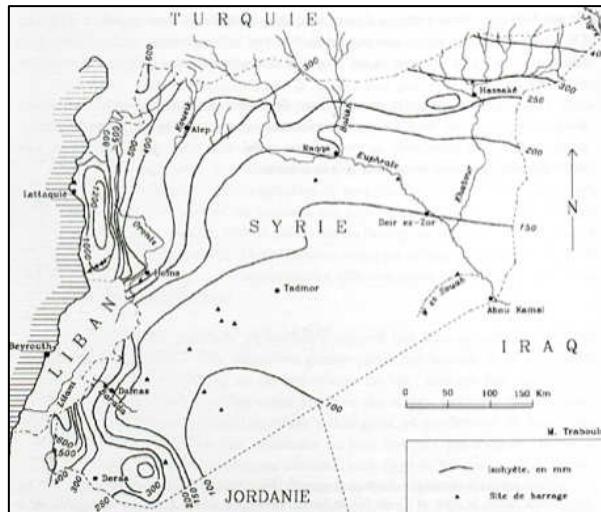


Fig. 1.3. Average annual precipitations.
(Calvet, Geyer 1992, Fig. 2)

Nevertheless, between the proper desert and the area where dryland farming offers acceptable production, there is an entire stretch of land where the uncertainty of rainfall and the irregularity of harvest deeply affect the lives of its inhabitants. This intermediate area is known in Arabic as *badiya*, characterized by a steppe climate: during few months (winter time) it becomes lush and can be exploited for sheep and camels breeding (seasonal migration). It houses the so called “dimorphic societies” that tend to settle in border areas, to make the best possible use of the natural resources offered by two different environments and two contrasting ways of life, in this case the nomadic pastoralism and the sedentary agriculture.²³ The whole region of Palmyra is part of it. Out of 43 years of examination (between 1946/1947 and 1988/1989),²⁴ the region of Palmyra has recorded an average annual rainfall of 136.7 mm, with 43.2 days of rain.²⁵ These precipitation falls from October to May, while the summer season (June-September) is totally dry. The peak of rainfalls is reached more frequently in December/January and March/April.

²³ For dimorphic society see Rowton 1976. Cfr. also Gawlikowski 1997, 37 and chap. 4.4.2.

²⁴ For the detailed data acquired see Sanlaville Traboulsi 1996, 30-32 and Sanlaville 1990, 3-4.

²⁵ The arid steppe region southwest of Palmyra receives an average annual precipitation of about 125 mm during normal years and only 50/70 mm in dry years. Al Maqdissi, Cremaschi, Morandi Bonacossi 2010.

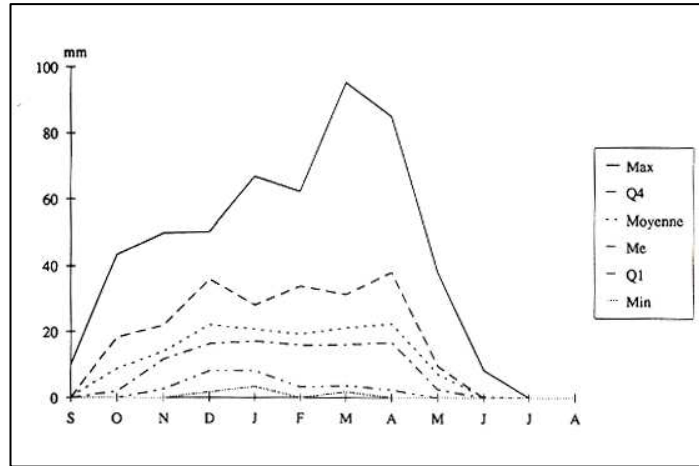


Fig. 1.4. Rainfall's regime of the Palmyrena.
(Sanlaville, Traboulsi 1996, Fig. 3)

The first highest point (December/January) is related to the types of weather fronts that circulate in winter at that latitude. The one in spring, instead, more pronounced in Syria moving eastward, can be explained with the frequency during this season of types of disturbances called “of cold drops”: the stationing of cold air bulks over an already hot region generates a strong instability leading to heavy rains with thunderstorms.

However, the same monthly distribution may change considerably from year to year: two years of rainfalls, i.e. 1968/1969 and 1971/1972, considered to be the most humid, have not had the same monthly amount and then the rain season appeared to be postponed of almost one month, both at the beginning that at the end of it.

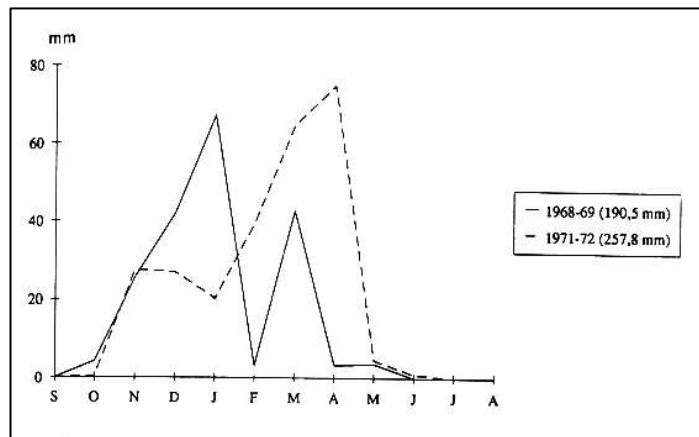


Fig. 1.5. Example of annual rainfall distribution at Palmyra: years 1968-69 and 1971-72.
(From Sanlaville, Traboulsi 1996, Fig. 4)

Usually, the most irregular months are those at the beginning and at the end of the rainfall season, which also correspond to the most important ones for agriculture: respectively sowing and gleaning.

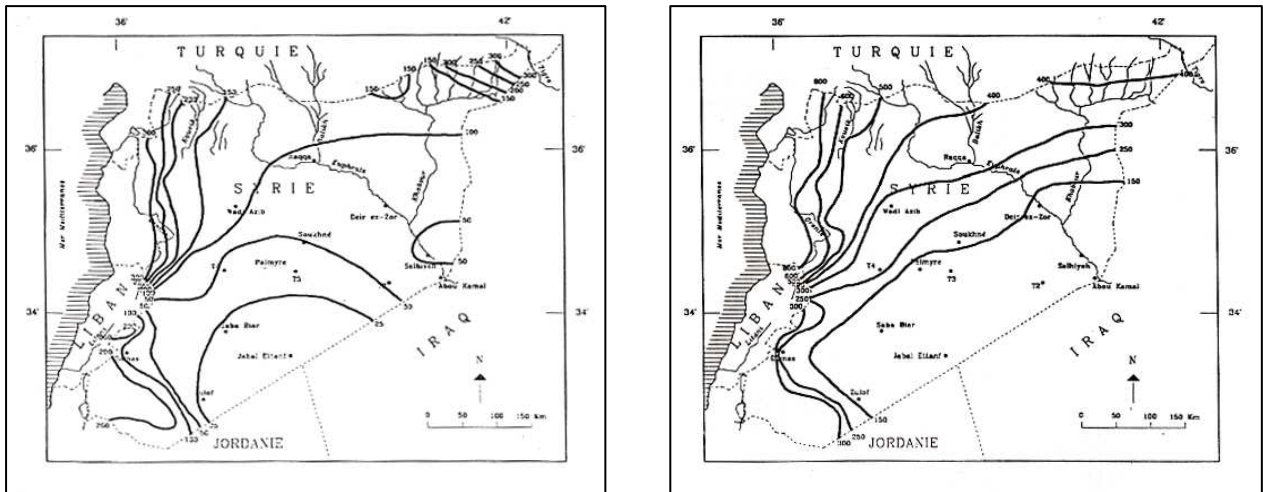


Fig. 1.6. Comparison between dry (1972-73) and rainy (1966-67) years.
(Sanlaville, Traboulsi 1996, Fig. 5-6)

In addition, there is also a strong inter-annual irregularity: in a sample of 15 years (1960-1974) the rainfall in Palmyra, ranged from 38.9 mm in 1973 to 285.5 mm in 1974. The comparison between dry years and wet years is very significant and demonstrates how incomplete the obtained averages can be. Moreover very dry years are usually grouped together, involving a strong depletion of water resources.²⁶

Finally, to complete the picture, it has also to be considered another factor, namely the high rate of evaporation in the region, caused by high temperatures and instead, the rate of atmospheric humidity very low.

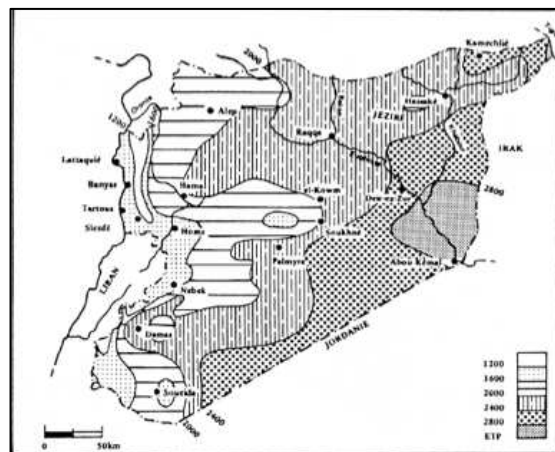


Fig. 1.7. Potential evaporation in Syria.
(Sanlaville 1990, Fig. 6)

²⁶ However, the region of Palmyra does not seem to suffer from long periods of drought, which are “limited” to 3 or 4 consecutive years. Sanlaville, Traboulsi 1996, 31.

The average annual thermal regime has its minimum corresponding to the rainy season and a maximum corresponding to the summer absolute drought. These high thermal contrasts translate into an elevated annual temperature range: the difference between the maximum temperature during the warmer months and that of the cold months in a year can reach 22 degrees. Winters, typical of continental climate, are cold: the average minimum temperatures are below 5 C° during December, January and February. Frosts occur for a total average of 14.7 days, distributed between November and March (but more often in December and January).²⁷ Summers are sultry, with an average of five months above 30 degrees. The average for July is 37.5 C°. Temperatures above 40 degrees are not exceptional (12 days between June and September), and the peak occurs generally in August (46.5 C°). In this case too, however, the difference between one year and the other can be substantial. The most variable temperatures, however, are those in winter since they are related to the alternation of different weather: the unsettled weather from the north (continental) and anti-cyclonic from northeast bring mostly cold air masses, while the weather coming from the southwest and west or the southeast anti-cyclonic carry relatively warmer air masses in Syria.²⁸

1.3.2. Idrology

Scarcity of rainfalls, duration and hardness of dry periods, strong evaporation, explain why in Syria most of hydrological systems are seasonal or temporary/intermittent (*wadi*), therefore being an unstable source of water, especially in arid regions. In fact, *wadis* are characterized by stream courses that are normally dry but in certain periods (winter) are subjected to large flows of water and sediment. Their characteristic process is the flash flood whose hydrograph (the expression of flow rate changes over time) has a steep, rapidly-rising limb, a sharp peak and an equally steep falling limb.²⁹

Underwater aquifers are numerous in Syria but size and quality change widely. They are mainly related to calcareous or arenitic subsoils, but also to other more or less permeable stones, such as basalt. Emergencies are most often located along faults.³⁰ Palmyrene aquifers are of poor quality, being sulphur or chloridric, and very often hot, because their water tables are associated with layers of Senonian or Eocene ages (Palmyra, Soukhné, el-Kown).³¹

²⁷ Very strong frosts ($\leq 5^\circ$) are not exceptional. The lowest temperare, of all time, -8.5° C, has been reached in December (Sanlavage, Traboulsi 1996, 32).

²⁸ Idem.

²⁹ Kamash 2009, 20.

³⁰ Wirth 1971, 109; Sanlavage 1990, 7.

³¹ For example, the Efqa source, which was the main water resource of the Palmyra's oasis until 1990s when it dried up, displayed a temperature all year round of 29° C, as surveyed in 1922 by Carle (1923, 155).

Syria is mainly a country of plains and plateaux, at least in principle more favorable to the creation of hydraulic structures. But in the highlands (in Jezira and throughout the area of the Fertile Crescent), water is found only in the valleys that are narrow and then only the bottom can be watered. Pleistocene terraces are not usually cultivable since they are often made of thick soils. Therefore farming, being of medium quality in the desert and located at oases because of the presence of gypsum in the subsoil, can be carried out in the lower terraces, more sandy and silty but narrow.³²

Classical oases are fed by artesian sources, such as in Palmyra, Soukhné and in a lesser extent El-Kown. The aquifers are related to the Palmyrene mountain ranges. The reserves, however, are limited and the quality is poor. To natural surfacing, the aquifers from foothill region can be added, which, being shallow but underground, are exploitable through drainage channels.³³

To conclude, it must not to be forgotten that climatic and hydrological features have changed, even considerably over centuries and millennia, naturally but also for human intervention, with important consequences for marginal arid areas for developing dryland agriculture and for the landscape itself.³⁴

1.3.3. Flora and Fauna³⁵

Flora and Fauna communities of the Near East are products of a formative process that began millions of years before man arrived in the region, but their actual distribution and character, took shape gradually from the late glacial Pleistocene, around 10,000 years ago. The diffusion models have been dynamic, continuously adapted to climatic and geographical changes and to land-use by humans. In many areas, the impact of urbanization has profoundly transformed the biotic associations, increasing the difficulty of characterizing ancient environments.³⁶ Patterns of growth of the plants and their distribution are largely determined by topographical factors and soil conditions that operate the movement and the retention of water as well as human impact on the environment.³⁷

In the Syrian region, the winter rainfall regime, with the maximum shifted increasingly towards springtime and moving eastward, is very favorable to grasses and especially cereals. The natural vegetation is that of an herbaceous steppe where grasses predominate, particularly in the valleys and

³² Sanlaville 1990, 9.

³³ Wirth 1971, 112-113; 119- 120; Sanlaville 1990, 13.

³⁴ Sanlaville 1990, 14.

³⁵ For what it concerns agricultural products and animal husbandry I refer to chap. 4.4.

³⁶ Gilbert 1995, 153.

³⁷ Gilbert 1995, 158.

depressions, but much more scattered on rocky slopes. Mountains, better watered, bring a large number of trees, especially pistachios and terebinth.

However, the human occupation began very early and has been almost always continued. Connected to population and economic growth, but also to the revolution introduced with engines, the exploitation of the region is very intense nowadays: over-grazing and the systematic practice of plowing and cultivation of barley in humid periods, led to a strong degradation of the vegetation cover and have increased wind and water erosion, to the point that desertification is becoming a serious problem.³⁸

Typical plants are shrubs resistant to aridity, which survive thanks to their taproots that allow them to reach depth underground water, to their outer layer (light-colored or covered with wax) that reflect the heat, a thin hair which retains the moist air near the surface of the plant, and small leaves with deep pores which retain water by limiting evaporation. High rainfall regimes generally promote the spread of vegetation in the landscape while in drier areas plants tend to concentrate within *wadis*' beds. Together with broom (*Retama raetam*) also tamarisk (*Tamarix*) is located often in *wadis*' beds, bringing to the surface moisture from the subsoil and excreting salt in excess through special glands located in the leaves or in the stem. The salines in fact, promote different species of *Sueda Marittima* shrubs. As with tamarisks, date wild plants too mark the presence of water in desert areas. The frequent occurrence of decorations depicting palm trees in ancient art, stresses its importance as a source of high nutrient food, of timber, even if it is of low-level, and places of shelter from the heat.³⁹

Faunal evidence suggest that the North-African donkey (*Equus africanus*), ancestor of modern donkey (*Equus asinus*), existed in Arabia and Syria.⁴⁰ Also several wild species of animals appear between bone findings of archaeological sites. Among ungulates, gazelles are the most common but there were also other types of wild ungulates animals, such as onagers (*Equus hemionus*) and oryx (*Oryx leucoryx*) and perhaps even ostriches (*Struthio camelus*). Gazelles, a subgroup of the antelope's family, are thin animals equipped with long legs. They measure 85-170 cm in length, have a long tail (15-30 cm) and can reach 50-110 cm tall (at the shoulder) and weigh 12-85 kg. The coat is generally yellowish-gray in color on the dorsal region and on the sides and white on the lower region. In several species, along the hips, there is a black stripe that separates the darker coloration of the back from the lighter bellied one. The horns are present in both genders - except for the *gazzella subgutturosa*, where they are present only in males, but in females are shorter and

³⁸ Wirth 1971, 130-134; Sanlaville, Traboulsi 1996, 32.

³⁹ Gilbert 1995, 159.

⁴⁰ Gilbert 1995, 170. Cfr. also chap. 5.5.

more delicate. They measure *c.* 25-35 cm in length. Precisely the *gazella subgutturosa*, also called *gazzella persiana*, was the most common species in ancient times. Throughout the Near East, since prehistoric times, man has developed a system for hunting gazelles (but also other wild ungulates) through the use of so-called desert kites.⁴¹ However, due to the indiscriminate hunts based on firearms between 19th and 20th centuries, this species is officially extinct in Syria.⁴²

1.4. Environmental changes

Although the Southwest Palmyrena has not sustained large agricultural development and urbanization, all landscapes of the Near East have been transformed, making it difficult to determinate what pre-agricultural environment may have looked like.

These alterations can be much determined by human-induced impact on the landscape but it does not downplay climatic changes or other natural factors.

1.4.1. Climatic variations

Over the millennia, the Near East climate has experienced variations, albeit of little proportions.⁴³ They have probably affected precipitations, both the total and the annual amount of them. More often these changes have concerned a series of following years drier or wetter. Their influence is greater or less depending also on the natural environment. The more this is “fragile”, the more the negative consequences of these changes are significant and sharp.

The marginal zones of the deserts, as the case of Southwest Palmyrena, are the areas that suffer more from the effects of this inter-annual variability and even more from long-lasting changes. The consequences are various. The erosive power of the autumn rain that falls on dry surfaces is higher than that of the spring rains. If we consider the changes in the amount of precipitation, the consequences are even more evident: a feeble decrease, no matter how little of this occurs during few years, may lead to the abandonment of a site, a small increase, on the contrary, it ensures prosperity, but its evolution is somehow unpredictable. Consequently, the mere existence of a

⁴¹ About function and distribution of desert kites, especially in the Southwest Palmyrena, I refer to Morandi Bonacossi, Iamoni 2012.

⁴² According to the functionaries of the governmental reserve of Talila, near Palmyra, large herds of gazelle were still present in the Palmyrene desert until the Fifties of the last century, while the ostriches were extinct in the Thirties. Today in the Jezel region, on the southern slope of Jebel Abyad, only fifteen wild gazelles survive, while a largest group of gazelles (675), oryx (165) and ostriches (38) live in captivity in the reserve of Talila. Morandi Bonacossi, Iamoni 2012, 43 n. 46.

⁴³ For general lines on the ancient Near East climate changes see Wilkinson 2012, 10-15.

hydraulic system at a given moment in history, and then its neglect, may help to reconstruct environmental and climatic condition of the area.⁴⁴

Concerning specifically the Roman period, wetter conditions have been inferred for the Palmyrena from the presence of a silty organic layer dated between 1860 +/-70 and 1930 +/-30 BP (calibrated with OxCal: A.D. 2-337 at 95.4% and A.D. 3-131 at 95.4 % respectively) in the Wadi Aïd, which crosses the oasis. Sanlaville and Traboulsi remain cautious but suggest that the local population may have then benefited from a slightly wetter climate in the Roman period between the end of the 1st century B.C. and the 2nd century A.D.,⁴⁵ namely in the period when the tribes settled and the city experienced its peak of activity. Besançon, Delgiovine, Fontugne, Lalou, Sanlaville and Vaudour have come to a similar conclusion based on identical results from palynological samples from the Eastern Syrian Djezirah, and wider data from the Black Sea region.⁴⁶ A more clement climate implies shorter time spans between years in which the *wadis* could be cultivated and hence less strain on resources from one year to the next, from the end of the 1st century B.C. until the mid-3rd century A.D., precisely during the rise of Palmyra as an urban centre.

1.4.2. Land degradation

The designation of “land degradation” has a negative connotation since it implies a diminution in landscape quality mainly due to the human influence. Although such a negative implication is undeniable, it is a product of combination of natural and human forces.⁴⁷

Vegetation

Human impact on vegetation’s structure is evident from the curves of olive and grape pollen, which expanded rapidly during the Hellenistic, Roman ad Byzantine periods, after which olive production collapsed. Overall the woodland decline and associate growth of olive and grape between 4th/3rd century B.C. and 7th A.D. appear to reflect the characteristic settlement pattern of the Levant, where many upland or formerly marginal areas were settled and prospered, in part as a result of increased trade in olive oil and wine.⁴⁸ This pattern is associated with the development of *maquis* (evergreen shrubs) and *garrigues* (perennial scrub) vegetation on many upland as well as desertification in drier areas.

⁴⁴ Obviously, followed by more detailed analysis and considering the data in the whole context. Calvet, Geyer 1992, 128-129.

⁴⁵ Sanlaville and Traboulsi 1996, 33.

⁴⁶ Besançon *et alii* 1997, 19-20.

⁴⁷ Cordova 2005, 109.

⁴⁸ Wilkinson 2003, 128-150; 2012, 17.

The impact of grazing

Overgrazing became one of the most destructive forms of land degradation as nomad pastoralism appeared on the scene about 9,000 years ago. For millennia nomadic pastoralism has been a strategy of subsistence in areas with low carrying capacity, requiring seasonal movements of flocks to a variety of ecological zones. For this reason, there is basically no natural region spared from the devastation caused by livestock grazing. The wild ancestors of grazing animals had a minimal impact on the vegetation because they occupied specific habitats and predators controlled their population numbers. In particular, sheep and goats are the most common and destructive grazing livestock in the Near East. These two close species developed different ways of grazing. Sheep graze to root level, destroying the herbaceous mat to the ground; while goats graze indiscriminately on trees, shrubs and herbs. Overall, goats are more destructive, since their devastating effects cover large areas.⁴⁹ From an ecological point of view grazing implies the selection of certain species of plants that are preferred by livestock. This means that before the establishment of grazing, the composition of the vegetation in the most regions was probably different from today. In steppe and desert areas, members of the *Chenopodiaceae* (for example *Anabasis syriaca* and *Noaea mucronata*) and *Asteraceae* family (for example *Artemisia*) are among the main plants avoided by livestock.⁵⁰

Soil erosion

Soil erosion is one of the most evident forms of land degradation especially in the Near East environment. However, it is a natural process that implies the removal of mineral and organic particles from the ground surface by water and wind. The triggering of soil erosion is linked to the reduction of vegetation, which can occur as a result of both climatic change and human disturbances. The removal of soil particles by upland locations results in a rapid accumulation of sediments in valleys and lowlands. Thus, investigating past soil erosion histories starts with the study of sequence of sediments in the valleys.⁵¹

Soil salinization

Soil salinization involves the accumulation of salts in the soil, which prevents the development of crops and most plants. Soil salinization is a particular problem, but not exclusive, to arid and semi-arid lands. Although a natural process, soil salinization occurs through human intervention as a result of poor planning in the management of irrigated lands. The problems start when excessive

⁴⁹ Cfr. chap. 4.4.2.

⁵⁰ Cordova 2005, 117-118.

⁵¹ Cordova 2005, 119; M. Cremaschi and A. Perego in Magnani *et alii* (forthcoming).

irrigation produces water logging, which under conditions of high evaporation rates results in precipitation of salt near the surface of the soil.⁵²

Today, modern technology partially solves the problem through a system of deep drainage to lower and hold down the water table and with the use of chemical amendments to restore soil texture. However this technology did not exist in ancient times.

The degradation of soils by salinization means that fertile lands turn into a salty desert, forcing sometimes farmers to abandon their fields. However, soil salinization was not a major problem in the small-scale irrigation system of the Near East, because it was easier to control and in general implemented in the areas with better drainage. Overall, small-scale irrigation systems were more sustainable and ecologically better suited than large-scale systems. There are several types of small-scale irrigation systems, of which flood irrigation is the simplest and presumably the earliest. Operation is simple, since the main target is to build cross-channel dams intended to redirect floodwaters produced by sporadic rains and to maintain moisture in the soil. In antiquity these systems were extensively practiced in the driest part of the Near East.⁵³ Some of the small-scale irrigation systems are known for their technological sophistication, such as the *qanat* system, which consisted of gently sloping tunnels cut through river-laid material and bedrock (usually limestone) to transmit water from beneath the water table to the ground surface. Once on the surface, water was distributed by canals. The *qanat* system was highly efficient since it reduced loss of water by evaporation and consequently avoided salinization.⁵⁴

1.4.3. Paleoenvironmental changes in the Southwest Palmyrena

Concerning the area of interest, recent specific studies on palaeoenvironmental changes have been carried out by the joint Syro-Italian mission of Prof. Cremaschi and Prof. Morandi Bonacossi.⁵⁵ Until the last campaign in 2010, the investigated areas included the lake formations reported in the geological map of Syria at Abou Fawares, and the lake terraces in the Sebkhath al-Mouh.⁵⁶ These areas, connected by the narrow saddle separating Jebel Qayad from Jebel el Madjur, belong to the same wide endorheic depression, which was shaped in the Miocene and then filled with fluvial and lacustrine sediments during the Pleistocene and the Holocene.⁵⁷ Lake deposits dating back to the Upper Pleistocene are widespread; they are evidence of wet environmental conditions and indicate

⁵² Cordova 2005, 120-121.

⁵³ Wilkinson 2012, 8-9.

⁵⁴ See chap. 4.3.

⁵⁵ For the results reported here I refer to al-Maqdissi, Cremaschi, Morandi Bonacossi 2010; Cremaschi *et alii* 2011 and Morandi Bonacossi, Iamoni 2012.

⁵⁶ Soulidi-Kondratiev, 1966.

⁵⁷ Idem.

the occurrence in the geological past of a large lake basin, which attracted human groups during the Middle Palaeolithic, as confirmed by many sites dating to this period that have been found in rock shelters and as open-air sites along the valley of Wadi al-Hallabat. Numerous sites have been recorded also in the corridor connecting both lake basins and in the surrounding steppe during the period characterized by wet climate.

Abou Fawares. Lacustrine deposits dating to the Pleistocene lie in the lower part of the Ad-Daw depression, at its eastern end, in the locality of Mazraet Abou Fawares. Subsequently, sediments were incised by fluvial activity and the resulting fluvial net was later enlarged by wind erosion. Thus, the smooth bottom of the basin valley is dissected by elongated interconnected shallow basins, displaying a flat bottom. Inside, thin discontinuous lacustrine marls have been observed, consisting of planar layers of dark organic matter-rich sand alternating whitish sandy-silty strata. In this locality, during the last campaign, thanks to a better archaeological visibility, many Neolithic sites have been identified.⁵⁸

The Sebkhath al-Mouh (or mud-flat): the southern margin.⁵⁹ Remnants of fossil dunes, up to 3 m high and oriented E-W, have been observed at the eastern side of the delta originating from the confluence of the Wadi al-Hallabat, al-Annan, and Wadi Habash, which delimit the Sebkhath al-Mouh to the south. On the basis of stratigraphic and archaeological contexts they have been considered as having been deposited during a dry phase in the Upper Pleistocene. The dunes are composed of cross-stratified cemented sand, whose grains are made of reworked gypsum crystals and the ones facing the *sebkhath* are lined with lacustrine deposits, consisting of loose to weakly cemented sand, composed of finely subdivided gypsum crystals and oncoids. Considering stratigraphic relationships and the archaeological contexts, scholars have suggested a Late-Glacial or Early Holocene age for them. The lacustrine deposits give rise to a discontinuous flat terrace, lying at *c.* 1.5 m above the alkaline mud of the present *sebkhath*; it also extends to the west of the delta system, at the margin of the bedrock hills delimiting the *sebkhath*. Both on the sand ridges and on the terraces several archaeological sites have been recorded. On the base of the lithic finds dating to the Late Epipalaeolithic to the Pre-pottery Neolithic, a long lasting presence of human groups along the margins of the *sebkhath*, between the end of the Pleistocene and the beginning of the Holocene, has to be inferred.

These results have led to conclude that the territory of Palmyra including the couvette of Palmyra (Abou Fawares and Sebkhath al-Mouh) went through opposite environmental changes during the last

⁵⁸ They consist mostly of concentration of lithics in surface but few, well-preserved primary archaeological structures such stone circles delimiting fireplaces, have been found.

⁵⁹ The other part of the Sebkhath is outside my research area so it will not be presented here in detail but only in the general conclusions.

100,000 years. Between Late Pleistocene and Early Holocene, due to a humid phase, the area became a freshwater lake basin and the shores of the lake were inhabited by different communities of hunter-gatherers and early farmers as testified by the dense concentration of sites. Then, after the Mousterian, when the climate changed again from humid to dry, the former lake basin was replaced by a seasonally-flooded, saline marsh,⁶⁰ called *sebkhat*, less extended than the freshwater lake, which is the present day situation. In this phase the margins of the *sebkhat* were affected by strong wind erosion, and the windblown sands were deposited as small dunes along the shores of the former lake, closing the slopes of mountains to the south of Palmyra.

This climatic change from wet to drier may have favoured a main shift in settlement patterns and subsistence strategies, leading to the progressive nucleation of the oasis. Later permanent settlement and productive activities (agriculture) were concentrated within the oasis, where water resources had survived despite reduced precipitation. Whereas the surrounding dry steppe started to be exploited by mobile pastoral and specialized seasonal hunter communities who left a specific and characteristic signature in the archaeological landscape, as testify by the numerous cairns and desert-kites (gazelle-hunting system) identified along the Jebel Hayan and the Jebel al-Abtar flanks and across their watersheds; the latter ones probably still in use until the Roman period.⁶¹

⁶⁰Since then, up to modern time, it has been used as a “reservoir” for collecting salt, one of the primary natural resources for human communities (cfr. chap. 4.2).

⁶¹ Morandi Bonacossi, Iamoni 2012.

Chap. 2. Sources

2.1. Introduction

This chapter aims to provide a general review of the sources examined in this research.

A scientific study of Southwest Palmyrena in Roman time cannot depend only on one or two historical sources, but must take into account a wide variety of literary, archaeological, epigraphic and other material. Moreover, there is no pre-eminent source to which we can turn. Instead, we are forced to rely on more or less peripheral comments in works devoted to other subjects, which touch the topic from time to time. Therefore, the scattered and diverse nature of the evidence warrants some caution.

It is undeniable that archaeological and epigraphic sources provide the bulk of the material available for this study. However, they are not mutually exclusive and cannot be taken alone as sole evidence. They need to be discussed, compared and combined each other and complemented by literary ones in order to provide a firm proof.

2.2. Ancient literary sources

Ancient literary sources about Roman Palmyra are sparse but useful. Unfortunately they tend to provide more information, whatever historical, geographical, economical, artistic etc., about the city itself. References of classical authors to its hinterland are very scarce and very general, as that of Pliny the Elder (A.D. 23-79), who presented Palmyra within its ecological niche: «Palmyra, a city famous for its position, the richness of its soil, and its pleasant waters, incorporates fields encircled on all sides by a vast circuit of sand; and, as though removed by the natural order from other lands, and enjoying a separate lot between two supreme empires, that of the Romans and that of the Parthians, in times of discord, it is always the first concern on both sides».⁶² More useful appears to be the work of ancient geographers such as Strabo (c. 64 B.C. –A.D. 19) or Ptolemy (c. A.D. 90-168) who provided some useful data on places' locations or distances.

⁶² Plin. *HN* 5.21.88: *Palmyra urbs nobilis situ divitiis soli et aquis amoenis vasto undique ambitu harenis includit agros ac velut terris exempta a rerum natura privata sorte inter duo imperia summa Romanorum Parthorumque est prima in discordia semper utrimque cura.* For commentary, see Will 1985.

The 4th to 6th century A.D. authors have been examined for drawing patterns of development of the area in Late Antiquity.⁶³ A Late Antique literary source worth to be mention more extensively, is the *Notitia Dignitatum tam civilium quam militarium in partibus orientis / occidentis* (*ND*). It is a peculiar illustrated list, which itemizes the administrative hierarchy, both civilian and military, of the Late Roman Empire. There are several extant fifteenth and sixteenth-century copies. All of them are derived, either directly or indirectly, from the *Codex Spirensis*, which is known to have existed in the library of the cathedral's chapter at Speyer in 1542 but which was lost before 1672 and cannot, now, be located.⁶⁴ Divided into an Eastern section (*Or.*) and a Western section (*Occ.*) the *Notitia* lists high civil and military officials by his rank and title,⁶⁵ area of competence, subaltern personnel, units and garrisons under their command, therefore offering an unique insight into the organization of the Later Roman Empire. Colorful illustrations show the *insignia* of the each position, vignettes of the major towns in the area of responsibility, shield emblems of the military units and allegorical representations of the provinces (*simulacra privinciarum*).⁶⁶ The critical edition by Seeck is still authoritative and it will be my edition of reference.⁶⁷ Probably the *Notitia* was in origin a single based text divided into eastern and western parts dated with certainty between A.D. 386 and 394 (Theodosian time). However, the eastern list ceased to be updated after the death of Theodosius in January A.D. 395, whereas the western part underwent continual revision until at least A.D. 419 and possibly much later. Therefore, the version of the text we have comes from a place in the western part of the empire. Maybe, as supposed, from the court of Galla Placidia and Valentinian III (A.D. 423-455).⁶⁸ However, no absolute date can be given as well as the original purpose of the entire work is still matter of debate. It has been proposed that the *ND* was not primarily an administrative document but instead an ideological text meant to illustrate and emphasize the unity and cohesion of the Roman Empire.⁶⁹ Therefore, using this text to reconstruct the history of late imperial bureaucracy is probably wrong-based. However, an ideological document can deliberately falsify reality but to do so it uses real fragments of fact. For this reason,

⁶³ These sources have been collected in an invaluable source book by Dodgeon, Lieu and Greatrex, where English translation is provided (Dodgeon, Lieu 1991 -A.D. 221- 363- and Greatrex, Lieu 2002 -A.D. 363-630). The only weakness of this sourcebook is the absence of the original language text.

⁶⁴ The Bavarian State Library provides a full online scan of the 1542 manuscript's copy (Clm 10291) with its modernized illustrations:

<http://daten.digitalesammlungen.de/~db/bsb00005863/images/index.html?fip=193.174.98.30&seite=179&pdfseite=>
(consulted 01.12.2013).

⁶⁵ Beginning with the *praefecti praetorio* in the civil branch and the *magistri militum* in the armed force, down to the *dioceses* and provinces.

⁶⁶ Unfortunately for the *Dux Phoenicis*, whose territories the Southwest Palmyrena belongs to, the emblem is not provided.

⁶⁷ Seeck 1876. A new edition/translation by Peter Brennan (University of Sydney) is expected to be published soon in the series *Translated Texts for Historians* by Liverpool University Press.

⁶⁸ Brennan 1996, 166-168; Kulikowski 2000, 360.

⁶⁹ Kulikowski 2000, 360.

it cannot be completely discarded but has to be employed critically. As extant, since the western list contains an unknown number of progressively overlaid changes, it cannot be subjected to precise or unitary dating, and then only that information confirmed by other sources can be used for historical or archaeological purposes. On the other hand, this is not the case for the eastern part that can be considered as evidence for the eastern empire around A.D. 394.⁷⁰ Consequently, I have made extensive use of the information provided by the *Notitia* especially for recovering ancient toponymi and their corresponding allocated military units.

Beside these ancient literary works, there are also some ancient itineraries and maps, which can be useful. The main one is the so-called *Tabula Peutingeriana*, a medieval copy of an ancient map. Since this map is the main source referring to a road connection between Palmyra and Damascus running north of the Jebel Rawaq, I will discuss it within the chapter devoted to the Southwest Palmyrena's road network system.⁷¹

To conclude, literary sources are an important but limited resource for the study of the Southwest Palmyrena in Roman time.

2.3. The epigraphic *corpus*

Since narrative sources lack detail, however, one of the main evidence of this study is the growing *corpus* of epigraphic material.⁷² A substantial number of inscriptions have been recovered at Palmyra, much less from its hinterland. Coming from different contexts (funerary, public, religious), they are mostly in the Aramaic local dialect, i.e. Palmyrene, or sometimes bilingual (Greek and Palmyrene),⁷³ rarely trilingual (Greek, Latin and Palmyrene).⁷⁴ Most of the inscriptions are short and consist of only a few fragmentary lines mentioning a name. In contrast, there is the so-called Tax Law, a bilingual (Greek and Palmyrene) inscription, which provides a wealth of data on Palmyra's regional economy.⁷⁵

⁷⁰ For further discussions see Brennan 1996 and 1998, Kulikowski 2000.

⁷¹ Chap. 5.4.2.

⁷² The best-updated review of the epigraphic *corpus* available is in Yon 2012, 3-7.

⁷³ Only one inscription is bilingual Latin and Palmyrene: *IGLS* XVII, 208.

⁷⁴ According to Yon 2012, 3-4: *c.* 2200 (2800 including *tesserae*) are Palmyrene inscriptions; *c.* 500 Greek inscriptions of which mostly are bilingual; 50 Latin (some trilingual too).

⁷⁵ Cfr. 4.2 *infra* (also for the text editions). The general bibliography on this famous inscription is immense. See mainly: Lidzbarski 1898, 463-473, Pl. XXXIX.3; Charlesworth 1924, 49; Schlumberger 1937; Seyrig 1941, 155-175; Piganiol 1945; Milik 1972, 209-211; Raschke 1978; Browning 1979, 15-18; Matthews 1984; Teixidor 1983, 1984; Lipinski 1985-1986; Bounni 1989, 251-266; Bowersock 1989, 63-80; Kubaissi 1996; Lövinqvist 2008; Hoffmann-Salz 2011, 421-446.

Furthermore, there is a large *corpus* of 633 inscribed *tesserae*, small clay tokens utilized to gain entrance to banquets and other gatherings.⁷⁶ The vast majority of the *tesserae*, however, are uninscribed but no less important because of their art historical value.

Palmyrene inscriptions (including bilingual and trilingual ones) have been collected in main *corpora* or published in single articles.⁷⁷ In 2012, the first part of volume XVII of Greek and Latin inscriptions of Syria (*IGLS*) came to light. It includes Greek, Latin and bilingual (Greek-Aramaic or Latin-Aramaic) and trilingual (Greek, Latin, Aramaic) inscriptions. They come from the city itself and its immediate surroundings, in particular its necropolis. This book is of great value because, until now, several *corpora* of Palmyrene Aramaic texts have been made but it is the first time that all the Greek and Latin inscriptions of the city are collected, translated and commented together. Unfortunately, the second part, which contains the inscription coming from the hinterland, i.e. the Palmyrene region, and the so-called Palmyra Tax Law, has not been published yet.

A distinctive group within the wide epigraphic *corpus* is represented by the Latin and Greek inscriptions displayed by milestones and boundary stones. The first subgroup is the main evidence employed for establishing path of routes' connection between places and therefore it has been treated in more detail in chapter 5.⁷⁸ Instead, the only boundary stone found (not *in situ*) in the Southwest Palmyrena at Qasr al-Heir al-Gharbi has been already discussed in the previous chapter since it is apparently the only firm evidence when establishing the borders of the region under study.

To conclude, from this brief review, it is clear that to epigraphic evidence must be allotted a very important place in the study of Southwest Palmyrena.

2.4. 19th and early 20th century travel accounts⁷⁹

Since its rediscovery in the 17th century, Palmyra has been a desired destination for European explorers, travelers and scholars of the Middle East. Lady Hester Stanhope (1813), William John Bankes (1816), Charles Leonard Irby and James Mangles (1817), Léon de Laborde (1827), Charles Greenstreet Addison (1838), Charles-Jean-Melchior de Vogüé (1853), William Henry Waddington (1861), Honore d'Albert Duc de Luynes (1864) and Richard Burton (1869-1871) are just few of the most famous ones to have visited the city during the 19th century. However, pretty much all of them

⁷⁶ du Mesnil du Buisson 1944; Ingholt, Seyrig, Starcky 1955.

⁷⁷ For the main *corpora* see List of Abbreviations. For articles see *Syria* and *AE* mainly.

⁷⁸ See especially chap. 5.1 for a general introduction on the structure and purposes of milestones' inscriptions and for a list of the principal studies where they are collected.

⁷⁹ For a general review of the 19th and early 20th century explores see Degeorge 2001, 220-243 and Sartre, Fouriat 2008, 14-27; 114-117.

focused their attention to the oasis, with its incredible ruins, or the immediate surroundings neglecting its hinterland. In their favor, it has not to be forgotten that, they often carried out their trips in difficult conditions.⁸⁰ Only few and sparse information can be gathered from their reports but they are still very useful because some of them attest for the first time archaeological remains that later have been lost. Moreover, these reports collected also a large amount of geographical, artistic, historical and social information. In any case, despite sometimes accurate descriptions, the explorations carried out so far in Palmyra, had no scientific character. The observation of the ruins was inspired also by romance.

It is only with the end of the 19th and beginning of 20th century, that systematic surveys began. Explorers like Moritz did their best to give clear and factual accounts of what they could see, so their reports can be useful but have to be used critically since they are not often so accurate.⁸¹ However, they were still generally more interested in locating and identifying sites with considerable buildings, i.e. mainly cities or large settlements and in recording any inscriptions they came across as they passed through, rather than spending several days at one site recording its remains in detail.

With the establishment of the French Mandate in 1920 and the creation of the “Service d’Antiquités du Levant” scientific excavation and surveys started but, again, the main focus was the oasis itself. The hinterland, apart for the unequalled works of Schlumberger in the Northwest Palmyrena and at Qasr al-Heir al-Gharbi,⁸² was primarily explored for epigraphical researches.⁸³

Among the large amount of explores and scholars that have carried out their work before the Syrian independence, two figures deserve to be treated here in more detail: Alois Musil and Antoine Poidebard. One of their main credits is to concentrate their researches in the hinterland rather than, as usual, in the city itself. For this reason, despite all concerns, they are both primary sources from archaeological but also geographical and social points of view.

2.4.1. Alois Musil (1868-1944)⁸⁴

Alois Musil was a Moravian theologian, orientalist, explorer and writer. He travelled widely through the desert areas of Northern Arabia, Syria and Southern Mesopotamia between 1908 and 1915. In

⁸⁰ Burton 1872, 22-27.

⁸¹ Moritz 1898.

⁸² His research in the northwest was published in 1951 but the survey and excavation have been carried out between 1934 and 1937 while the excavation at Qasr al-Heir al-Gharbi was carried out between 1936 and 1938 (Schlumberger 1939a, preliminary report; in 1986 the final report was published posthumous).

⁸³ Jaussen, Savignac 1920; Dunand 1931;

⁸⁴ For a more detailed description of his life I refer to Harrigan 2009 and Said al-Said (<http://faculty.ksu.edu.sa/5621/Publications/Alois%20Musil%20A%20Life%20between%20Science%20and%20Politics.pdf> - consulted 03.12.2013).

particular, the Palmyrena region was explored in 1908, 1912 and 1915. However, the results of these travels were not published until 1928.⁸⁵ The only critical review to his study was made one year later by Dussaud.⁸⁶ Musil's reports include many site plans, which give the impression to be accurate but in fact they are often incorrect probably also because for many sites he spent not more than 1-3 hours there.⁸⁷ However, it has not to be forgotten that, at that time, it was not bureaucratically so easy to travel within the Ottoman Empire. Also, since working primarily in winter, he had to contend with cold, rain or snow and strong winds while travelling on horse or camel back and camping out before photographing or drawing ruins. These difficulties were often increased by the risk of being robbed or raided, as well as, for some, repeated illness and "servant problems".⁸⁸

Later sources (notably Poidebard, some of whose plans dependent on Musil's ones) have not always been aware of the drawbacks of his plans.⁸⁹ However, Musil does provide an invaluable collection of photographs and data that sometimes document buildings or features now disappeared. Furthermore, he represents also an invaluable source for social aspects' researches.⁹⁰ As said above for early reports, Musil's data have to be used critically and his identification of sites as Roman should often be taken with caution as for the case of Qasr a-Heir al Sharqi,⁹¹ now proved to be an early Islamic new urban settlement.⁹²

2.4.2. Antoine Poidebard's researches in Syria (1925-1932)

Even when conditions became better in the period of the French Mandate between the World Wars it was not easy to reach the more remote parts of the Roman frontier. In this context, the potential of aerial survey for studying ancient remains in the Syrian Desert was recognized early on by Antoine Poidebard.⁹³ Born in 1878 at Lyon, France, he became a Jesuit in 1910, after which he was sent to the Middle East to work in Armenia. In the course of the First World War his knowledge of

⁸⁵ Musil 1928.

⁸⁶ Dussaud 1929. The base of discussion was provided by his own study (Dussaud 1927).

⁸⁷ For example at Khan Abou Shamat he was there for 1 hour and 12 minutes (Musil 1928, 10-11); at Khan al-Manquora, an extensive site with several installations extending over half a kilometer, he was at the site for 2.5 hours (Musil 1928, 31-33); at Khan al-Hallabat he spent 1.5 hour but this included an attack by, and negotiation with, hostile tribesmen (Musil 1928, 91-94); at al-Basiri his plan was "not finished" when he was interrupted by a band of soldier (Musil 1928, 128-131).

⁸⁸ Musil 1928 *infra*; Poidebard 1934, 35.

⁸⁹ Poidebard 1934, 38, 43-49.

⁹⁰ Especially for history and evolution of pastoral nomadism and Bedouinism. See Rosen, Saidel 2010 and Franz 2011, 20.

⁹¹ Musil 1928, 77-78: «unquestionably Roman».

⁹² Genequand 2003b, 2008.

⁹³ For more detailed studies on Poidebard's life, researches I refer to the two exhibitions organized in France in 2000 and 2004 (Antoine Poidebard 2000 and Antoine Poidebard 2004).

languages was valuable and he served as a liaison officer to units of the French army in the Middle East. During his service he was, in 1918, attached to the British military staff in the northwest Iraq, where he was trained in aerial observation by the Royal Air Force. He was then nominated French military representative in the short-lived republic of Armenia. After the end of the hostilities, he moved to Syria. In 1925 he was making use of the aerial reconnaissance in an investigation of the sources of water available in the arid regions of northeastern Syria and from this his archaeological work in the air developed, as he explained in his book.⁹⁴ He was then an officer of the reserve, attached to “l’Armée de l’Air, 39^{ème} régiment d’Aviation”. His first work in archaeological air reconnaissance took place over the Syrian Djezirah, i.e. the northeastern Syria. Then he carried out surveys of the Roman frontier defenses in the area south and southeast of Damascus, in May 1927, again in Djezirah in autumn of 1927 and 1928, and between Bosra and the Euphrates in autumn 1930. In 1929 his target became the exploration of the entire course of the *limes* in Syria and of the routes and stations beyond the *limes* towards the Gulf. His results were published in 1934 in *La Trace de Rome dans le desert de Syrie and in some articles in Syria*.⁹⁵ His flying was done in Potez 25, general purpose biplanes piloted at different times by various officers, the most important of whom was Commandant de Boysson. The plates in *La Trace de Rome* include many excellent vertical views under which the name of the pilot is given. It must be presumed that these photographs were taken by a vertical camera, fixed to the aircraft and operated by the photographer, under the direction of the pilot. However, there are also oblique views, under which either the pilot’s name or Poidebard’s initials (A.P.) are given. The probable explanation is that only the photographer could operate the vertical camera, but that both, he and Poidebard, could take oblique photographs using hand-held cameras.⁹⁶

Poidebard’s aerial surveys were supplemented by visits to sites on the ground, made with the help of the French army. The méharistes, i.e. camel corps, and the other troops acted as protectors and guides and provided labour if excavation was carried out. This «vérification au sol» was considered essential in the interpretation of the photographs.⁹⁷

After the completion of this major work, Poidebard transferred his attention to an important area in Syria lying behind the Roman frontier. His flying between 1934 and 1937 provided data for another book published together with the epigraphist Mouterde, after some delay due to the burst of the

⁹⁴ Poidebard 1934, 4-11. This is a source document of great interest, describing much that is still the common currency of present day aerial archaeologists, such as detection of sites by the shadow cast by low sun-and also much that is certainly not the standard practise, such as landing near a site to make an immediate ground reconnaissance. Cfr. also Kennedy, Riley 1990, 50-51, 56-63 and Bauzou 2000a, 59-71.

⁹⁵ Mouterde 1930-1931; Mouterde Poidebard 1939.

⁹⁶ In his later campaigns the photographic arrangements must have been modified, because in *Le Limes de Chalcis* are published many obliques, with the initials A.P. below and few verticals (Kennedy, Riley 1990, 63).

⁹⁷ Poidebard 1934, 9.

Second World War, in 1945: *Le Limes de Chalcis*. In the introduction to this second work, Poidebard noted two scholars, Deschamps and Schlumberger, who had employed the airplane in their archaeological research and credited his own pioneering efforts in the field.⁹⁸ With the publication of this book, Poidebard's researches in Syria were officially over. The following years were, in fact, dedicated to aerial and underwater archeology in Lebanon, starting at Tyre before the war and continuing at Sidon.⁹⁹

Still 80 years after, his works remains the most comprehensive source for any study of the Roman presence in Syria between the Tigris and the border of Roman Arabia, although only few of his results have been either followed up or questioned.¹⁰⁰ However, the more closely one looks at every aspect of his work, the more problematic it becomes. While his photographic records remain unparalleled,¹⁰¹ his interpretations were based on a series of assumptions, derived from other scholars, which later have been confuted.¹⁰² Since he had a preconceived idea of what he was looking for and there were plenty of ancient remains to choose from, he was able to select the ones that fitted his assumptions. In fact, all aerial surveys have the drawback of recording a palimpsest of remains from different periods, which often can only be dated by excavation and not all sites cited on 1934's map were investigated by Poidebard himself or described in the text when excavation had been done by others.¹⁰³

Poidebard worked following the deductive method: first he decided that there must have been a road between two known key points, he then looked for "intermediate posts" at suitable intervals (10 and 20 miles) and found them. The fact that the road is "Roman" proved that the posts were "Roman", so these posts provided examples for the identification by comparative typology of further "Roman" sites which establish further "Roman" roads, and so on. Many of what he considered Roman remains in fact, still arise some chronological doubts. Moreover, there are further problems in relation to ground plans included in his work: they are not always supported by photographs or by published ground surveys. In some cases he probably did use photographs but for some reason (poor quality of them?) he decided not to publish, relying instead heavily on Musil's plans with all the drawbacks related to them.¹⁰⁴

⁹⁸ Mouterde and Poidebard 1945, VIII and Schlumberger 1939a, 198 n. 3, 1986.

⁹⁹ Poiebard, Lauffray 1951.

¹⁰⁰ Followed by Kennedy, Riley 1990; questioned by Van Berchem 1952, 3-6.

¹⁰¹ See Bauzou 2000a, 76-78; Gregory 1995-1997: 1995, 32 (despite all his methodological problems); Kennedy, Riley 1990, 60-63; Jaubert, Debaine 2000. Indeed in the 1920s and 1930s, much of the land surface in the Middle East and the buildings on it were still in a state not very different from hundreds of year before.

¹⁰² Poidebard was not himself a classical scholar and was happy to accept without question the opinions of the established authorities of his time, as Chapot and Fabricius (Poidebard 1934, xvii). See Bauzou 2000a, 72-75; 2004, 138-145; Gatier 2000 and Gregory 1995-1997: 1995, 28-31; 1996, 180-183.

¹⁰³ As for the case of Dumeir.

¹⁰⁴ Gregory 1995-1997: 1995, 30-31.

Therefore, as already said for Musil, Poidebard's work, notwithstanding his insuperable documentation for archaeological studies and starting point for modern studies, has to be treated with prudence.

2.5. The archaeological evidence

Due to the nature of this research it is undeniable that, despite all the important contribution of other sources, the archaeological data represent the primary bulk of it. Unfortunately, as it will be clear from the following analysis, surveys and/or excavations project, whatever of early travelers or modern/contemporary scholars, have focused mainly on the oasis of Palmyra, usually neglecting its hinterland. This trend has changed only in the last few decades and hopefully it will be resumed in the future and integrated with the contribution of new data acquisition techniques such as the remote sensing.

It is important, however, to point out that archaeological information can often "stand on its own", but it is preferable to have another source to confirm and contextualize the evidences.

2.5.1. From the Syrian Independence (1946) to contemporary projects

The Syrian independence opened the doors to new international archaeological projects. Among them, it is worth to mention those started decades ago and still ongoing, or recently concluded: the Syrian-Polish mission working in the Diocletian camp and directed by Prof. Gawlikowski,¹⁰⁵ the Syrian-Japanese mission working in the southeast necropolis and directed by Prof. Saito;¹⁰⁶ and the Syrian-German mission directed by Prof. Schmidt-Colinet working south of the main *wadi* of the city (Wadi As-Suraysir/al-Qubur) where the Hellenistic city was located.¹⁰⁷ However, again, between the 1980s and 1990s, the main interest was the city itself not its hinterland.

One exception was represented by Bauzou's research. This French scholar, accompanied by Gatier who studied the hydraulic systems, surveyed most of my area of competence in late 1980s as part of his (unpublished) doctoral thesis on the road system of Roman Syria. In his valuable work, he travelled along the so-called *Strata Diocletiana*, re-analyzing the milestones along the road and surveying almost all the sites.¹⁰⁸ Afterwards, in 1990, he joined Lenoir for a new systematic survey

¹⁰⁵ For the last report (2009): <http://www.pcma.uw.edu.pl/en/pcma-newsletter/2009/hellenistic-and-graeco-roman-period/palmyra-syria/> (consulted 05.12.2013).

¹⁰⁶ For temporary report: Saito 1995.

¹⁰⁷ Schmidt-Colinet 2013.

¹⁰⁸ Bauzou 1989a.

of (only) the military installations along the road.¹⁰⁹ However, during these missions, only surface surveys, and no proper excavations, have been carried out. Therefore, caution is required when dealing with the data of surface surveys. Often, the impressions gained by such surveys can be overturned when intensive investigations of the same area are carried out. Nonetheless, in the absence of any intensive excavation or other dating criteria, in most other cases there seems to be little choice but to accept the dates provided by surface surveys, unless there is a compelling reason to reject them.

Things changed with the 21st century. While several projects were still concentrated in the oasis,¹¹⁰ its hinterland, i.e. the Palmyrena, started to become the main focus of new archaeological surveys. Moreover, these projects were not centered only on Roman period but also on pre-classical and Islamic ones providing invaluable “long-durée” perspectives.

In fact, from 2008 until 2011, a Syrian-Norwegian mission has worked in the Northwest Palmyra. Resuming Schlumberger’s study, but enlarging the area (Jebel Chaar, Jebel Abyad and Jebel Merah), this research project aimed to shed light on the relationship between the settlement in the oasis of Palmyra and its hinterland from Prehistoric period up to the Islamic area, the role of the city between Roman and Parthian empires and in the wider setting of the Indian Ocean and Orient-Occident commerce. The proceedings are expected to be published during next year.¹¹¹

For what it concerns the Southwest Palmyrena, some sites have been systematic surveyed and partially excavated by Genequand as part of a Syrian-Swiss project studying the Omayyad settlements in the Syrian steppe: “Implantation Umayyades de Syrie et de Jordanie”.¹¹²

Nevertheless, the most important project for this study is represented by Syro-Italian mission in the western Palmyrena. As already pointed out in the first chapter, they area under study coincided approximately with the area under concession of the “Palmirena, Missione archeologica”.¹¹³ The project, started in 2008 and carried out in cooperation between the Universities of Milano and Udine (Italy) and the Directorate General of Antiquities and Museums (Syria) under the direction of Prof. M. Cremaschi (University of Milano) and Prof. D. Morandi Bonacossi (University of Udine) and Dr. Michel Maqdissi (DGM-Damascus), has been conducting geoarchaeological surveys in the

¹⁰⁹ Lenoir 2011, 47.

¹¹⁰ To the above-mentioned ones, we have to add the archaeological excavation in the southwest neighborhood of the city started in 2007 by the University of Milan and directed by Prof. Grassi (PALMAIS Project).

¹¹¹ Meyer 2014 (forthcoming). For temporary results see Anfiset, Meyer 2010, Meyer 2013 and especially the accurate website where seasonal field-reports can be downloaded: <http://www.org.uib.no/palmyrena/index.htm> (consulted 05.13.2013).

¹¹² This project worked under the aegis of the Swiss-Liechtenstein Foundation for Archaeological Research Abroad (SLFA, Zürich) and the Directorate General of Antiquities and Museums of Syria. Genequand 2002, 2003a, 2003b, 2004a, 2004b, 2006a, 2006b, 2008.

¹¹³ <http://users.unimi.it/palmyra/intro.html> (consulted 05.12.2013).

Palmyra oasis and the desert areas to the south and west of it.¹¹⁴ Unfortunately, due to political troubles undergoing in Syria, the mission has been halted since the last campaign in 2010. However, the main results have been presented in conferences and published in several articles.¹¹⁵ Goal of the joint Syro-Italian mission to the western Palmyrena was to investigate the environmental changes and the cultural dynamics of this region from Prehistory to recent times through the survey of archaeological sites and their environmental context. The project aimed to study the settlement and land use patterns in the semi-arid region of the western Palmyra desert and to trace the changes in the cultural dynamics that occurred in the area from the Upper Pleistocene to the Late Holocene. Palaeoenvironmental research includes also the reconstruction and dating of the desert margins variations and of the nucleation process of the Palmyra oasis.¹¹⁶

Two other projects need to be mentioned before concluding this general review. Both concluded, they involved areas not belonging to the Palmyrena region but strictly interconnected with it: the DAI mission directed by Konrad that, as part of a research at the Roman *limes* in northern Syria, has studied the Roman forts of *Cholle*, *Tetrapyrgium*, *Resafa* and *Sura*,¹¹⁷ and the Finish Project (SYGIS) in the Jebel Bishri (2000-2010) directed by Lönnqvist.¹¹⁸

2.5.2. Satellite images

The use of satellite images as source for a territorial study is a relatively new approach, especially regarding historical works. Like aerial photographs, they fuse image and map but they differ from aerial photographs in important ways. First, they can image wider areas at once, with compared reduced cost than aerial surveys. They are able to detect and reproduce terrain features, such as variation in soil composition or vegetation type and density, important for archaeological interpretation. A final and important difference is the fact that many satellite systems provide near real-time images at interval ranging from hours to weeks, constituting a unique source of information about environmental processing occurring over time.

Satellite images have been available to civilians since early 1970s but initial use of them by archaeologists and other researches was complicated by high data costs, obscure formats and the difficulty of manipulating large volumes of data. So only in the last two decades, satellite imagery

¹¹⁴ The area is limited in the north by the Jebel Abyad and Jebel as-Sati, while in the south is closed by the parallel reliefs of Jebel Hayan, Jebel al-Khan and Jebel al-Abtar.

¹¹⁵ Al-Maqdissi, Cremaschi, Morandi Bonacossi 2009, 2010; Cremaschi *et alii* 2009; Cremaschi, Zerboni 2012; Morandi Bonacossi 2013; Morandi, Iamoni 2012.

¹¹⁶ Al-Maqdissi, Cremaschi, Morandi Bonacossi 2010, 2.

¹¹⁷ The research was conducted actually during the 1990s but the results published in 2001. See also Konrad 1996 (temporary report) and 2008.

¹¹⁸ For German excavations see Konrad 1996, 2001 and 2008. For the Finnish project see Jebel Bishri 2008 and 2011.

has become readily available and affordable to archaeologists, particularly SPOT and LANDSAT, but they have proven to be less useful for identification of most landscape features due to its relatively low resolution.¹¹⁹

Recently, however, a satellite data source has become accessible which combines the high resolution and legibility of traditional aerial photographs with the greater aerial coverage of satellite imagery.¹²⁰ CORONA satellite program was the first American intelligence satellite program, in operation from 1959 to 1972, now obsolete for intelligence purposes it was declassified in 1995. A total of 800,000 images is now available over the U.S. Geological Survey website,¹²¹ or through the Arkansas University CORONA Digital Atlas of the Middle East.¹²² One of the main advantages of the CORONA photographs is that they preserve the landscape of the late 1960's and early 1970's, a time at the very beginning of the expansion of towns and intensive mechanical agriculture in the Near East. As a result, and if we combine them with aerial photographs, we have a record of many landscape features which have been subsequently damaged or destroyed. Despite that, up to now, satellite images have already and extensively been used to collect data for studying the ancient landscape and road network systems in the Middle East archaeology,¹²³ only very few studies have been carried out for the Palmyra region, apart for the city itself.¹²⁴ A drawback for these images is that unfortunately many of the photographs are marred by cloud cover and they required sophisticated processing to georectify them prior to use.

By contrast, a quite new, and promising, tool that I have extensively used is Google Earth. Since 2007, Google Earth normally delivers 2.5 m resolutions imagery taken from SPOT 5 satellite.¹²⁵

Using satellite imagery provided by Google Earth has a number of benefits. The main one is that it is easy and cost-free accessible to everyone, compared to the most expensive satellite images,¹²⁶ and it allows the study of locations that are too dangerous to visit and where all missions have entirely ceased (as Syria now), and it is also very useful for monitoring destructions and changes due to warfare, looting, flooding, deforestation, construction and other human and natural impacts.¹²⁷ As scholars have pointed out "Google Earth democratizes archaeology".¹²⁸ However,

¹¹⁹ Kouchoukos 2001.

¹²⁰ Ur 2003, 104-105.

¹²¹ https://lta.cr.usgs.gov/declass_1 (consulted 05.12.2013).

¹²² <http://corona.cast.uark.edu/index.html#bbox=3828985,3559947,5478802,4282736> (consulted 05.12.2013).

¹²³ As examples see Philip *et al.* 2002; Kouchoukos 2001; Ur 2003.

¹²⁴ Colosi *et al.* 1996; Kennedy, Riley 1990, Lönnqvist *et al.* 2011, Meyer 2014 (forthcoming).

¹²⁵ <http://www.cnes.fr/web/CNES-fr/5738-en-images-des-images-de-spot-5-sur-google-earth.php>. (consulted 05.12.2013).

¹²⁶ Fees are required only in order to obtain GoogleEarth Pro version. However, Google Earth Pro does not provide higher resolution images – its chief benefits are the ability to save images at higher resolutions and access to enhanced tools capabilities, such as measuring the area of polygons and uploading data.

¹²⁷ Kennedy 2011, 1285; Thakuria *et alii* 2013, 20.

while it has obvious advantages, it also presents to archaeologists new problems and challenges. For example, even if this is not the case for the dry steppe or desert areas, Google Earth images cannot penetrate thick vegetation and purchasing higher cost resolution imagery is therefore necessary. Sometimes, as for some sites belonging to the area under study, the images provided are not of good quality. The more recent addition to the Google Earth instruments, such as the “history” feature that allows users to look at decade’s worth of images from a single location, eventhough in some way very useful, does not always obviate the problem. In this case but also in general, multiple satellite images of an area, taken at different times, are the best. Also Google Earth is not as sophisticated for data analysis as other forms of GIS and data collection.

To conclude, notwithstanding all the advantages of their use, satellite images cannot be expected to provide evidences for dating a site themselves. As aerial photographs, they record a palimpsest of remains of all periods, which often can only be dated by excavation. It is undeniable that they are cheaper and more comfortable solutions than real expeditions but they have to be considered as starting point for later field works not the end point of a study. This fact was already understood in the 20th century about aerial photography by Poidebard, but it can be applied for satellite images too:

Toutes les fois qu’il sera possible, le contrôle au sol suivra l’observation aérienne. L’observation aérienne prépare les reconnaissances à terre, les dirige et les contrôle. Par son rôle en géographie historique, elle est un auxiliaire précieux permettant d’exécuter rapidement les études préliminaires sur le terrain et de faire une économie de temps et de dépenses considérable. Elle ne peut cependant remplacer la recherche au sol.¹²⁹

¹²⁸ Idem.

¹²⁹ Poidebard 1934, 9.

Chap. 3. Sites of the Southwest Palmyrena

3.1. Introduction

A preliminary task for a territorial study is firstly to decide the area interested by the research and therefore the historical sites included. If the first step appeared to be “easy”, the second one was not. Indeed, many problems arose that had to be taken in consideration:

1 - The impossibility of doing a personal direct survey on the ground due to the actual political troubles happening in Syria,¹³⁰ which led me only being able to use “indirect” archaeological sources such as aerial photographs and satellite images, i.e. remote sensing archaeology.¹³¹

2 - The unreliability of many of the early reports and studies and their continuing acceptance at face value. Therefore, notwithstanding their insuperable documentation for archaeological studies and starting point for modern studies, especially Musil and Poidebard’s work, their data needs to be treated with prudence.¹³²

3 - Only few sites have been properly excavated and among these very few have been published in detail. Moreover, even modern surveys with the aim of studying the hinterland and not only single sites, presenting substantial remains, have not been carried out until recent years.¹³³

4 - Later (and precedent) use of Roman sites A fourth problem lies in the fact that it was generally believed, until recent years, that any extensive occupation and cultivation on the desert fringe areas was brought to an abrupt end by Arab conquest and that the Arab themselves were not able to produce well-finished masonry.¹³⁴ In fact, modern Bedouins also tended to bestow to Romans (*chouroul romani* or “du travail de Romain”), every construction or ruins ancient enough that its maker is not known anymore.¹³⁵ Only in the last decade surveys and excavations began to show how much continuity there was for as much as 200 years after the conquest.¹³⁶ In fact, in areas such Mesopotamia and the Levant, strategic sites, especially those near good water supplies on major routes, are likely to have been occupied repeatedly (both in Roman period and in later centuries) whenever the need arose, so that repairs and re-builds are likely to have included earlier

¹³⁰ See also Introduction. The dramatic situation is also not allowing other researchers to continue with their fieldwork (both excavations and surveys) since 2011.

¹³¹ For Poidebard’s aerial photos and researches see chap. 2.4.2 while for satellite images chap. 2.5.2.

¹³² For a discussion above this typology of sources and for more information over Musil and Poidebard’s works see chap. 2.4.1 and 2.4.2.

¹³³ See chap. 2.5.1.

¹³⁴ Poidebard 1934, 95.

¹³⁵ Kobori 1990, 322 and Geyer 2004, 299.

¹³⁶ Genequand 2003a, 2004b, 2006b.

materials from the same site or sometimes even from further away.¹³⁷ Confusions and misconceptions have arisen in the past between late Roman forts and early Islamic palaces because both can be expected to consist of a rectangular enclosure, with projecting corner, interval and gate towers flanking a single entrance and with an interior arrangement of rooms-against-the-walls round a courtyard in the centre.¹³⁸

Moreover, even contemporary archaeological surveys do not produce totally reliable information on the dates of a site. In this area natural erosion that quickly carries away any previous stratigraphy is a very common phenomenon.¹³⁹ Therefore, surface sherds' remains can be misleading. Even stratified pottery may be of little use at eastern sites if not supported by other evidences, since coarse ware types persisted over very long periods¹⁴⁰. One more, even inscriptions can turn out to be "false friends": a lot of them are or cannot be *in situ*, therefore leading to false assumptions.¹⁴¹ Proper excavations are consequently needed.

In addition, until recent time the question of the long-term territorial control and management was related only to the Islamic period while Late Antique occupational forms (5th-7th century A.D.) have not been even considered.¹⁴² To conclude, there are also remains of many apparent Roman structures, which have functioned not exclusively in the Roman time but also reused until nowadays.¹⁴³

Considering all the listed preceding problems, it has not being easy to decide the criteria for a site's inclusion in this chapter. Therefore, I decided to follow and adapt the criterion applied by Gregory, even if she was focused only on military installations, and to include a site only when it has physical (visible, excavated or recorded) remains to justify the possibility of considering it as Roman.¹⁴⁴ The sites, divided in "functional groups" to which correspond a specific symbol in the general map (see the legend's chart below), are listed internally following geographical criteria, from north to south and from west to east.

¹³⁷ As it seems the case for the site of Qasr al-Heir al-Gharbi were all the Roman architectural elements found were probably brought there from the near Hawwarin or Qaryatayn or even Palmyra itself. See Genequand 2006a, 72.

¹³⁸ Gregory 1995-1997: 1995, 182-192.

¹³⁹ See chap.1.4.2.

¹⁴⁰ Gregory 1995-1997: 1995, 194-195; Isaac 1990, 157, n. 277.

¹⁴¹ As in the case of the toponym *Veriaraca*, originally located 9 km west of Palmyra, along the road to *Emesa*, on the basis on an inscription non *in situ* (*CIL*, III, 141774.4 = Thomsen 1917, nr. 45 a2), and now being recognized as Khan al-Hallabat, around 31 km south from Palmyra along the road to Damascus, after the discovery of other inscription (Bauzou 1993, 34-34, Inscr. E,G; 44-45). See also below and chapter 5.

¹⁴² As the case of the rural settlements of al-Bazzurye and al-Sukkarye. See below sites' sheets.

¹⁴³ As for example the case of the Harbaqa dam (see chap. 4.3.1) and of many forts that have been used for centuries as shelters by Bedouins.

¹⁴⁴ Gregory 1995-1997: 1995, 2. She has been more strictly than me, deciding, "to not include sites where evidence is scanty and the claim is made by one individual without any corroboration, as many Poidebard's ones" (see also Gregory 1995-1997: 1995, 31). However I decided to make an exception listing also water point sites (Twale, al-Edeyé and al-Hawa) that could be go under such consideration. This because, in the dry Syrian steppe, minor water point resources, some of them still in use today, can have a good chance to have been used also in ancient times.

When possible, I stated both ancient (dividing them if provided by literary or epigraphical sources) and modern names. I have tried to be as consistent as possible in the spelling of modern place names; in general following the English transliteration provided by recent archaeological investigations or at least the most common before them. When this has not been possible, for example with modern names provided by ancient surveyors (each of whom naturally tends to transliterate according to his own language), the toponym is followed by an asterisk.

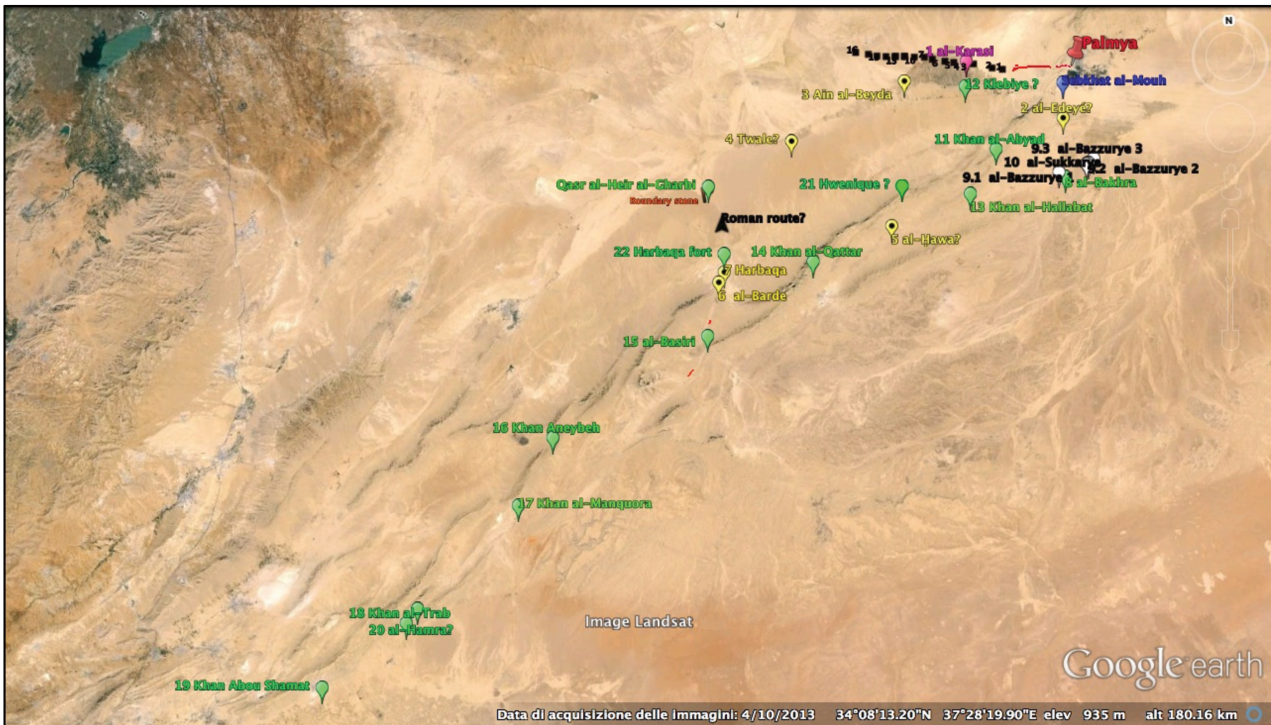



Fig. 3.1. Sites of the Southwest Palmyrena.
(Image produced from Google Earth)

Symbol	Type of sites/remains	Notes
	Religious place	
	Military installation/fort ¹⁴⁵	These sites should actually be accompanied also by the following water point symbol since all of them

¹⁴⁵ In the Eastern frontier research the term “fort” has often been applied to some structures simply because, to the observer, they look like forts, that is, they possess what were various features of fortifications, such as thick walls and/or projecting towers. A useful definition is that of a fort as being a fortified building “...whose primary purpose is to defend a strategic position. Its inhabitants are soldiers”. In fact, there are many other possible functions for a building of fortified appearance: it may be a caravanserai, residence or other building whose purposes includes the protection of the occupants or goods within its walls. In the Eastern frontier there are the remains of many apparently fortified structures, which may or may not have functioned primarily as forts or fortification. Some of them may have encompassed any or all of these purposes. (Gregory 1995-1997: 1995, 79). Therefore, they will be listed below only those structures confirmed to be military installations by surveys/excavations or epigraphical sources (inscriptions). Literary sources are much more problematic: the terminology used is likely to have varied not only in time but also







		can also be categorized as water point. I decided, however, in order to not create confusion, to point out only the “more categorizing feature”.
	Rural settlement	
	Water point	
	Boundary stone	
	Milestone	
	<i>Qanat</i>	The <i>qanawat</i> included in the map are those surely recorded by an analysis of Google Earth images or provided by detailed archaeological surveys. Those mentioned in early excavations or surveys, but that cannot be clearly located, have been left out.

Table. 1. Map legend

3.2. Sites of religious worship

Al-Karasi (SITE NR. 1 / Figg. 3.2 – 3.3 a-c)

ANCIENT NAME OF THE SITE: unknown

MODERN NAME OF THE SITE: al-Karasi (name of the altars), Qasr Kharâbeh* (the locality),¹⁴⁶
Bîr Trayfawî¹⁴⁷

LOCATION: 34°32'37.61"N 38° 4'34.81"E = 34.543781N 38.076336N (around 20 km southwest of Palmyra)

ERA: Roman (2nd century A.D.)

SURVEYS: H. Waddington 1861; A. Musil 1897;¹⁴⁸ M.A. Jaussen and A. R. Savignac 1914; M. Pillet 1941

REMAINS: a group of 3 altars + 1 one nearby¹⁴⁹

from place to place and even from individual to individual. For example, one of the most important late literary sources for the ancient *Strata Diocletiana's* forts, the *Notitia Dignitatum Orientis*, refers to almost every site as a *castellum*, including known cities with known large walls (as Palmyra).

¹⁴⁶ Jaussen, Savignac 1920, 369.

¹⁴⁷ Lehmann 2002, 101.

¹⁴⁸ He recovered only two altars.

¹⁴⁹ The latter may have been destroyed or it is not visible anymore because archaeologists have not recorded it *in situ* after the publication in *CIS*.

IMAGES: from the Palmyrena Project website of the University of Bergen:

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraW/Bel%20Alters/index.htm> (consulted 4.11.2013)

REFERENCES: Chabot 1922, 77-79, Pl. XXIII, nr. 5, 6, 7; *CIG* 4500; *CIS II*, 3994-3995; De Vögue 1868, Palmyre 124; Deplace 2005, 242 annexe 20; Drijvers 1976, 13-16, Pl. XXVIII.1-2, XIX.1-1 (for iconographical comparanda); Le Bas, Waddington 1853, nr. 2627; Lehmann 2002, 101 (368. 287), Tav. 20 nr. 17; Lidzbarski 1898, 474 c.3; Jausen, Savignac 1920, 368- 369; Kalinka 1900, 24 nr. 9; Milik 1972, 292-293; Musil 1928, 135; *PAT* 0340; Pillet 1941, 5-17; Seyrig 1933b, 267-269, 275-276, Fig. 9; Smith 2013, 142.

COMMENT: The place is located *c.* 20 km southwest of Palmyra.¹⁵⁰ There are, *in situ*, three hard monolithic limestone altars (a, b, c) displaying bilingual inscriptions with similar dedications paid by the city treasure (ἀργυροταμία/ *b'nwšt'*) of Palmyra on the 21st of Adar/Dystros A.D. 114,¹⁵¹ to the «Anonymous God» in the Palmyrene version, assimilated to *Zeus Hypsistos* in the Greek one. They present similar dimensions: *c.* 1.7 m (height) x *c.* 1.20 m (side from the base) x *c.* 0.80 m (side from the shaft) and they are few steps far from each other. The decorated and inscribed sides are orientated northward. The more eastern one, coming from Palmyra (nr. a), has always been described as portraying a thunderbolt and bearing a Greek and Palmyrene inscription.¹⁵² Seemly, the more western one shows the same image and Greek text but with a different version of the Palmyrene one (nr. b), while the third one (nr. c), missing the upper part almost until the basement and placed in a lower ground level, seems to bear a different emblem but with same inscriptions of nr.a.¹⁵³

¹⁵⁰ 2.5/3 hours from Palmyra along the way to Ain al-Beyda according to Lidzbarski 1898, 474, 3.5 hours towards *Emesa* according to Les Bas, Waddington 1870, nr. 2627 and De Vögue 1868, Palmyre 124.

¹⁵¹ Palmyrene and Greek month which corresponds to March.

¹⁵² So Chabot 1922; *CIS II*, 3994; Deplace 2005; De Vögue 1868; Les Bas, Waddington 1870; Milik 1972; Seyrig 1933b.

¹⁵³ Les Bas, Waddington 1870, nr. 2627; Chabot 1922, 77-78.



Fig. 3.2. View of al-Karasi's site.

(After Palmyrena Project website: <http://www.hist.uib.no/antikk/dias/Syria/PalmyraW/Bel%20Alters/Data/page.htm?3,0>)



Fig. 3.3. a-c. Iconography of the three altars.

(After Palmyrena Project website: <http://www.hist.uib.no/antikk/dias/Syria/PalmyraW/Bel%20Alters/index.htm>)

Greek text (nr. a, b, c)

Διὶ ὑψίστῳ καὶ ἐπηκόῳ ἡ πόλις εὐχὴν.

Ἔτους ἐκὺ Δύστρου

ακ', ἐπὶ ἀργυροταμιῶν

Ζεβειδοῦ Θαιμοαμεδοῦ, καὶ

Μοκινου Ἰαριβωλεοῦς, καὶ

Ἰαριου Νουρβηλοῦ, καὶ

Ἀνανιδος Μαλιχοῦ.

Translation of Greek text:

To Zeus

On 21st of March 425 (= A.D. 114), during their term in office as treasurer Zebeidâ son of Thaimo'amed, and Mokimû, son of Yarhibol, and Yarhai, son of Nourbêl, and Ananidès/Ananû, son of Malikû.

Aramaic text (nr. a, c):

'bdt mdynt' lbryk

šmh l'lm'ksp

'nwšt' b'nwšwt zby[d']

br tym 'md mškw wmq[ymw]

br yrĥbwl' gml' wyrĥy

br nwrbl šsry w'ny [br]

mlkw 'ny byrĥ 'd[r]

ywm 21 šnt 425.

Aramaic text (n.b)

'bdt mdynt' lbryk

šmh l'lm' mn ksp

'nwšt' b'nwšwt zby[d']

br tym 'md mškw wmq[ymw]

br yrĥbwl' gml' wyrĥy

*br nwrbl šsry w'**nnw**[br]*

*mlkw '**nnw** byrĥ 'd[r]*

ywm 21 šnt 425.

Translation Aramaic text:

The city made (the altars) to Him whose name is blessed forever. From gold/at the expenses of the treasury, in their term as treasurers Zebeidâ, Thaimo'amed Mashilu, Yarhibol Gamilâ, Nourbêl Shaggarai, Malikoû Ananû, the 21st of the month of Adar, in the year 425 (= A.D. 114).

Pillet,¹⁵⁴ re-analyzing the altars from an artistic point of view (and with a different daylight too), proposed that none of them displays actually a thunderbolt but instead:

– nr. b, it is a sheaf with long and rich cobs, held in the middle by an hand with the upper arm (Fig.3.3.b);

– nr. a, it is less clear than the previous one but it appears to be a tree with a robust trunk, with big roots and a thick foliage held in the middle by an arm (Fig. 3.3.a);

– nr. c, despite being so damaged, it seems to show part of a bed or a table for religious offerings (Fig.3.3.c).

He therefore conclude that the worshippers used to depose offerings, as cereals or fruits, on the top of the altars (a) and (b), placed in a higher ground level in order to protect them from animals. The altar c, instead, placed lower compared to the other two, was used to make sacrifices («sortes de *thymiateria*»),¹⁵⁵ or perhaps the «Anonymous God» received here the honour of a *lectisternium*.¹⁵⁶ The entire group would be erected in order to consecrate a grove of tree and the cultivation of the surrounding area, during a sort of agricultural spring festival.¹⁵⁷ In fact, all the inscriptions bear the date of 21st March, the spring equinox. In the hot and dry Palmyrena region this time corresponds to a period when young trees have recently been planted and crops are to be made.¹⁵⁸ The altars can be considered as an indirect evidence for an intensive agricultural exploitation of the area already in Antiquity.¹⁵⁹ In modern times, in fact, the altars are still preserved in the middle of fields.

In 1914, during their exploration trip on behalf of the Académie des Inscriptions et Belles Lettres for the publication of the *corpus* of Palmyrene inscriptions, Pères Jaussen and Savignac reported to have found a fourth altar, smaller (1.05m H x 0.42 m L), «around fifteen feet south of the previous ones», bearing the same Palmyrene text.¹⁶⁰ It is *CIS II*, 3995. Actually this latter does not belong to the same group as the other ones and the inscription is not identical even if it is contemporary (22nd of *Shebat* A.D. 114 = 22nd of March): it is a dedication by private individuals.

¹⁵⁴ Pillet 1941, 9-11.

¹⁵⁵ Pillet 1941, 16.

¹⁵⁶ Kaizer 2002, 199; Seyrig 1933b, 275-276.

¹⁵⁷ Seyrig 1933b, 267-269 arrives to the same conclusion still considering the depiction as a thunderbolt: «J'ai pensé d'abord qu'elle commémorait la chute de la foudre sur un troupeau, et que l'autel avait été érigé comme une offrande propitiatoire... le tonnerre, loin d'être un agent de destruction, doit être ici le précurseur de l'orage bienfaisant, qui a procuré aux moutons et aux chèvres la pâture qu'une sécheresse prolongée avait empêchée de pousser.» He is actually referring here as a comparanda to a stone pyre found at Gdèm (55 km north of Palmyra along the road from Soukhne toward Alep via Abou Fayad) that it's later, between A.D. 187 and 195, but dedicated to the «Anonymous God» too and bearing the same design.

¹⁵⁸ The area around al-Karasi is more wet itself because it is located in a corridor protected on three side by the mountain chains, apart for the west side (*Emesa* direction), from where the rain comes from. Pillet 1941, 16.

¹⁵⁹ Seyrig 1933b, 267-260; Hausen 2012, 218-219. See also chap. 4.4.1

¹⁶⁰ Jaussen, Savignac 1920, 369; Pillet 1941, 5-6.

In the same text, Pères Jaussen and Savignac reported also the unearthing of a column around 200 m west of the three altars group bearing a Greek inscription as one in Les Bas, Waddington 1870, nr. 2627.¹⁶¹ Under the Greek text, a Palmyrene inscription appeared at that time, showing the indication of the XIV Roman mile, while, above the Greek text, some Latin characters appeared,¹⁶² followed by numeral XIII. It is the known milestone of Zenobia and Vaballatus.¹⁶³

It is interesting, I think, to note that this area was considered sacral so it was probably not at all isolated from the rest of the territory as it may appear at first sight nowadays. Schlumberger suggested that the al-Karasi altars might have been erected there also in order to mark the meeting point between the road Antiochia-Palmyra and the roads Emesa-Palmyra and Palmyra-Damascus via al-Qaryatayn/Nazala.¹⁶⁴ However, as proved by the discoveries of the Italian Geoarchaeological mission, he was wrong to suppose that it was the junction also for the first one (Palmyra-*Epiphaneia-Antiochia*).¹⁶⁵ The three roads maybe were connected only at the very end, near city's entrance.

The altars group represents the most ancient evidence of «Anonymous God»'s cult at Palmyra.¹⁶⁶ Scholars have tried to assign a name to this “hidden deity” choosing among those present in the Palmyrene pantheon. The most corroborated hypothesis is to recognize him as Baalshamin, on the basis of the epithets used in his inscriptions and of the common iconographical elements present on the altars consecrated to him.¹⁶⁷ An alternative less followed hypothesis asserts that under the «Anonymous God» we have to recognize, instead, Yarhibol,¹⁶⁸ the ancestral God of Palmyra, closely linked with the dawn of the caravan city around the Efqa source, where almost all the altars dedicated to him have been found.¹⁶⁹ Recently, Danila Piacentini suggested that with the periphrasis *bryk šmh l'im* equivalent to the Greek *Theos Hypsistos*, was indicated an autonomous deity with his own specific characteristics, to be framed in a broader context, supranational, and therefore not to be considered as an episode of syncretism, limited to the restrict Palmyrene pantheon.¹⁷⁰

¹⁶¹ They were actually wrong because the inscription corresponds to nr. 2628. Nr. 2627 is the altar's one.

¹⁶² The two scholars (Jaussen and Savignac) suggested for the Latin letters to read the usual milestones protocol of Valerian and Diocletian (3rd century A.D.).

¹⁶³ *CIS* II, 3971 (A.D. 268-270).

¹⁶⁴ Schlumberger 1939c, 552-553.

¹⁶⁵ Cfr, chap.5, Fig. 5.1. The last two also probably diverted eastern at Ain al-Beyda.

¹⁶⁶ Kaizer 2002, 199.

¹⁶⁷ Drijvers 1976, 13-16, Pl. XXVIII.1-2, XIX.1-2; Hvidberg- Hansen 1998, 16-17; Kaizer 2002, 160.

¹⁶⁸ Teixidor 1979, 118-119.

¹⁶⁹ The other ones have been found along the road to Homs and published by Starcky in *MUSJ* XXVIII, 1949-1950, 55-58, nr. 3 Pl. XVII.

¹⁷⁰ Piacentini 2008, 265. Already Milik (1972, 293): «Je suis convaincu que les dédicaces d' el-Kerâsi sont les premières de ce genre et témoignent d'une décision religieuse de la ville d'introduire un culte tout particulier,

3.3. Road station: water points¹⁷¹

Al-Edeyé (SITE NR. 2 ?)

ANCIENT NAME OF THE SITE: unknown

MODERN NAME OF THE SITE: al-Edeyé

LOCATION: no exact coordinates available (around 20 km south of Palmyra)

ERA: Roman? Islamic?

SURVEYS: A. Musil 1908 and 1912

REMAINS: unspecified ruins and spring wells

IMAGES: none available

REFERENCES: Musil 1928, 88, 94, 144, 242; Poidebard 1934, 171

COMMENT: The place is few kilometres north of al-Bakhra in the direction of Palmyra. Musil identified the al-Edeyé spring with the Syriac place name “Wdâje” on the base that *w* can only signify the vowel *o* that is pronounced *e* in the modern dialect.¹⁷² This place is mentioned in two medieval sources: Michael the Syrian (12th century A.D.)¹⁷³ and Gregory Bar Hebraeus (13th century A.D.)¹⁷⁴ who related that in the 27th year of the Emperor Justinian, al-Mundhir was pillaging the territory of the Roman Empire but was defeated and killed by al-Harith (= Aretas) by the spring of “Wdâje”. At his turn, al-Harith perished in this battle and was buried by his father in a shrine of the castrum of “Wdâje”. Moreover, Procopius attested a dispute in A.D. 535 between al-Mundhir’s Arab tribe (Alamoundaras) and the Arab tribes allied to Rome (al-Harith’s ones) for the control of the region south of Palmyra, called *Strata* for its reference to an ancient Roman road.¹⁷⁵ A fact that can match (or being simply a coincidence) with the location of the al-Edeyé which is near al-Bakhra where milestones belonging to the *Strata Diocletiana* have been found.¹⁷⁶

essentiellement municipal, sans lieux de culte et sans clergé, un phénomène exceptionnel dans l’histoire de religions ». Against Kaizer 2002, 199. «It is unnecessary to speculate with Milik».

¹⁷¹ A general discussion on the importance of water points presence for mobility within such arid landscape and a more detailed description of the water catching system and especially Harbaqa dam (Site nr. 7) will be provide in chapters 4 and 5.

¹⁷² Musil 1928, 144.

¹⁷³ *Chronique* 4. 323.

¹⁷⁴ *Chronicon Syriacum*, 85.

¹⁷⁵ Procop. *De bellis* 2.1.6.

¹⁷⁶ See chap. 5.4.3.

Ain al-Beyda (SITE NR. 3)

ANCIENT NAME OF THE SITE: unknown¹⁷⁷

MODERN NAME OF THE SITE: Ain¹⁷⁸ al-Beyda

LOCATION: 34°31'3.24"N 37°57'51.49"E = 34.517567N 37.964303E (around 30 km southwest of Palmyra)

ERA: Roman? Islamic? Modern

SURVEYS: E. Sachau 1879-1880; M.A. Jaussen and A. R. Savignac 1914

REMAINS: small fort (?) and wells

IMAGES: Gertrude Bell Archive, Album A_265-270 (1905) -May 1900:

http://www.gerty.ncl.ac.uk/photos_in_album.php?album_id=1&start=260

REFERENCES: Dussaud 1927a, 261, 271; Gatier 1996, 431; Lehmann 2002, 58 (354.285), Tav. 20 nr. 13; Jaussen, Savignac 1920, 368

COMMENT: This site was an important water point in ancient times, as it is in modern times, along the road that connected Palmyra to *Emesa/Homs* and Palmyra to Damascus.¹⁷⁹ In fact, in 1914 Peres Jaussen and Savignac attested the presence of two gendarmes of the Ottoman government to control the site.¹⁸⁰ The remains consist of a square rampart of about 29 m per side built of mud bricks with a stone base. At about 22 m from the fort there are wells, around 20 m deep that provide copious and good water for travellers.¹⁸¹

Twale (SITE NR. 4)

ANCIENT NAME OF THE SITE: unknown

MODERN NAME OF THE SITE: Twale or an-Nâjfe*¹⁸²

LOCATION: no exact coordinates available (around 48 km south of Palmyra)

ERA: Roman? Islamic?

SURVEYS: A. Musil 1908

REMAINS: unspecified ruins and a well

IMAGES: none available

¹⁷⁷ Dussaud 1927a, 261, 271 wrongly suggested *Beriaraca/Ueriaraca* that now is identified as Khan al-Hallabat, see below.

¹⁷⁸ Which means in Arabic “well”.

¹⁷⁹ See chap. 5.3 and 5.4.

¹⁸⁰ Jaussen, Savignac 1920, 368.

¹⁸¹ It is actually not clear in which direction the wells are located relative to the fort’s remains since the two explores (Jaussen and Savignac) state only: “15 steps forward”.

¹⁸² Musil 1928, 96.

REFERENCES: Musil 1928, 96; Poidebard 1934, 40, 171

COMMENT: Twale was linked to Khan al-Qattar via Ain' Wou'ouï*'s spring.¹⁸³

Al-Hawa (SITE NR. 5)

ANCIENT NAME OF THE SITE: unknown

MODERN NAME OF THE SITE: al-Ḥawa, Želīb al-Ḥawa*¹⁸⁴

LOCATION: no exact coordinates available (around 45 km south of Palmyra)

ERA: Roman? Islamic? Modern?

SURVEYS: A. Poidebard 1930

REMAINS: wells

IMAGES: none available

REFERENCES: Musil 1928, 94-94; Poidebard 1934, 48, 171

COMMENT: The remains consist on three wells of 4 m diameter,¹⁸⁵ with simple formwork but stones organized as facing.¹⁸⁶

Al-Barde (SITE NR. 6)

ANCIENT NAME OF THE SITE: unknown

MODERN NAME OF THE SITE: al-Barde¹⁸⁷

LOCATION: 34°13'55.27" N 37°37'0.79"E = 34.232019N 37.616886E (around 60 km southwest of Palmyra)

ERA: Roman? Islamic?

SURVEYS: A. Musil 1908 and 1912; A. Poidebard 1930

REMAINS: numerous wells

IMAGES: Poidebard 1934, Pl. XXXVI.3

REFERENCES: Musil 1928, 256-257; Poidebard 1934, 171, 188 Pl. XXXVI.3; Crouch 1975, 171

COMMENT: These square wells are covered by cut stones and they receive perennial water since are fed by a *qanat*.¹⁸⁸ Musil described them as «being from half a meter to 10 m deep.¹⁸⁹ They

¹⁸³ Poidebard 1934, 41.

¹⁸⁴ Musil 1928, 94.

¹⁸⁵ However, later Poidebard stated that the wells are two: Poidebard 1934, 171.

¹⁸⁶ Poidebard 1934, 48.

¹⁸⁷ The modern name al-Barde ("The Cold") means that the water always remains cold. For Musil is undoubtedly of later origin.

never lose their water, are at no great distance from the plain, and their vicinity is consequently much in favour as a camping ground». The site is along the “secondary” road through the Jebel Rawaq, linking Qasr al-Heir al-Gharbi and al-Basiri.

3.4. Roman military installations

3.4.1. Introduction

3.4.1.1. State of the researches

Some of the forts of the Syrian *limes* had already been described before the First World War by Musil,¹⁹⁰ but, as said above, the difficulties of travel caused many gaps and limitations in his reports. However, notwithstanding all its limitation and after a critical analysis, Musil’s work still provides an invaluable source of archaeological data.

Even when conditions became better in the period of the French Mandate between the World Wars it was not easy to reach the more remote parts of the Roman frontier. By making use of the aerial view and the mobility conferred by the aeroplane, Poidebard began a new state in the *limes*’s studies but as pointed out above his assumptions need to be taken critically.¹⁹¹ For what concerns here the military installations recorded in his book, a more careful inspection of Poidebard’s plans reveals, in fact, that are often wrong, even when the accompanied aerial photographs let to correct them.¹⁹² He deliberately decided not to use them, relying instead on Musil’s plans (for respect?) with all the drawbacks related. Indeed, Musil took some measurements during his quick visits but drew by default all angles with a degree of 90. He also measured the best preserved towers but he attributed to all of them the same dimensions, even when it was not the case as at Khan al-Qattar and Khan al-Hallabat.¹⁹³ For these reasons, similarities between Poidebard’s and Musil’s plans should be viewed with caution and seen as showing dependence rather than mutual support.¹⁹⁴ Other problems arise since not all Poidebard’s aerial recognitions were followed by ground surveys: some structures were visible on the ground but not from the air. For example at Khan

¹⁸⁸ Poidebard 1934, 188. For the barrages on the Wadi Barde from where the location takes its name see chap. 4.3.1 and 4.3.2.

¹⁸⁹ Musil 1928, 256.

¹⁹⁰ Musil 1928.

¹⁹¹ See chap. 2.4.2.

¹⁹² His vertical photographs (the majority) when reproducing standing buildings (as the *Strata Diocletiana*’s fort) can be used nearly always as plans. Nearly because there is always a slight but negligible deformation, due to lens curvature. In some other cases, he probably did take photographs but for some reason (poor quality of them?) he decided even not to publish.

¹⁹³ From the aerial photographs (and confirmed by ground surveys), at Khan al-Qattar one tower is clearly bigger than the other as at Khan al-Hallabat since it includes a well inside of it. Bauzou 2004, 76.

¹⁹⁴ Gregory 1995-1997: 1995, 30-31.

Aneybeh, Poidebard's plan shows wrongly only one door. The second one is almost totally buried under the fallen wall's remains, being then not visible from the air and only the monolithic lintel has been preserved. At Khan al-Manquora, Musil mentioned two opposite doors, framed by two U-shaped towers. There is no trace of them in Poidebard's plan because one has been walled up in the ramparts, being then not visible from an aerial photograph.¹⁹⁵ Nevertheless, Poidebard's plans have been the only ones available until the last decades, when more accurate surveys have begun to show some of their contradictions.

Indeed, since Poidebard's work, if we exclude Lander's book of 1984 that deals briefly with the eastern sites and stops at A.D. 410,¹⁹⁶ no general publications have been carried out for the eastern Roman fortifications until the 1990s when researches on the Eastern frontier were back "in vogue". Previous works tended to concentrate on individual sites or specific sections of the frontiers. In 1990, Kennedy and Riley's book highlighted, critically, the potential of aerial surveys to study the Rome's eastern frontiers installations. However, at least for the area under study, while proving good quality maps and photographs from Poidebard's archive, the two scholars re-proposed simply his data.

Systematic general studies on the Roman military architecture in the Near East up to the Islamic conquest have been undertaken only recently by Gregory, as PhD research at Sheffield University,¹⁹⁷ and by Maurice Lenoir.¹⁹⁸ Gregory provides a good overview of the state of knowledge on Roman military architecture in the Near East, with numerous maps and photographs, but also a critique (valuable but sometimes too strong) of the work of early explorers such as Musil and Poidebard. Gregory adopts what she describes as a "minimalist" approach to the evidence: «sites are assumed not to be Roman unless there is fairly conclusive evidence for their being so».¹⁹⁹ This means that her conclusions are also limited but her work is nevertheless useful for the valuable warnings it provides against over-interpreting archaeological evidence and for its great collection of archaeological data, even if of "second-hand".²⁰⁰

Lenoir's posthumous book,²⁰¹ the most recent and comprehensive work on Roman fort of the Near East and North Africa, constituted an invaluable base for this research. Indeed, it provided the most up-to date archaeological records and a useful reference model for most of sites studied.

¹⁹⁵ Bauzou 2004, 77.

¹⁹⁶ Lander 1984.

¹⁹⁷ Thesis submitted in 1991 but published later in Gregory 1995-1997, followed by a paper in 1996 (Gregory 1996).

¹⁹⁸ Lenoir 2011.

¹⁹⁹ As stated in this chapter introduction, I have followed and adapted these criteria for my sites overview.

²⁰⁰ In fact, as she pointed out in the introduction (Gregory 1995-1995: 1995, 1-2): «It has not been my intention to carry out further investigation of sites (although I have tried to visit as many as possible), but to report, review, analyze and comment on, as well as, if possible, draw conclusions from, the available (mostly) published material»

²⁰¹ The author, research director of the CNRS, died in February 2010.

Moreover, another inestimable source for my study have been the unpublished PhD thesis of Bauzou presented at the Université Paris I.²⁰² In the late 1980s he carried out a survey of the *Strata Diocletiana*' forts in relation to his project on the road system of ancient Syria. Even if some sites have been briefly visited and only few surface sherds examples collected, Bauzou's work is still up to nowadays the unique modern survey achieved at most of them.

To conclude this brief survey on the state of researches about military installations, Genequand's work on specific sites that presented also a later re-use in Omayyad period, cannot be left out.²⁰³

3.4.1.2. Terminology and classification²⁰⁴

Before starting a detailed description of the forts, it is necessary to deal with the problem of terminology and classification of military installations in the Ancient Near East. In fact, a common terminology has still to be developed by archaeologists. For what is concerned here, I have avoided terms used by ancient literary sources since they are words, which, like many others, have changed the meaning during all the Roman period. Latin terms (i.e. *castra* or *castellum*) have been applied only for specific sites when corroborated by contemporary sources,²⁰⁵ following the common, but by no means universal, custom in employing *castra* for a legionary fortress, *castrum* for an auxiliary fort of the Early Roman Empire and *castellum*, the diminutive, for its Late Empire successor.²⁰⁶ I have preferred instead to use the "more neutral" English term "fort" to define all military installations in the area, in order to avoid possible misconceptions.

As already pointed out in the Introduction, it has never to be forgotten that the investigation of the sites is at a far less advanced stage. Very few of the standing ruins have received proper attention and often there is no reliable evidence of their chronology. For some remains, sometimes, the only information available is the brief note of 20th century visitors, a plan and some photographs.

Due to this scarcity of well-established evidences, it has been a difficult task to categorize the forts. Therefore, I have decided to follow the general classification applied recently by Lenoir.²⁰⁷ The division has been made by design, i.e. plans and architecture (if enough survives), and by size, though it has not always been clear where to draw the line between "large" and "small" forts.

²⁰² Bauzou 1989a.

²⁰³ Cfr. chap. 2.5.1.

²⁰⁴ The issue of the role of the forts as well as of the armies there stationed within a wider political and defensive plan in Late Antiquity will be discussed in chapter 5.

²⁰⁵ I have followed the criteria used also by Gregory 1995-1997: 1995, 7-9.

²⁰⁶ Kennedy, Riley 1990, 20.

²⁰⁷ Lenoir 2011.

Of the 13 military installations (including the watchtower at al-Hamra) surveyed in the Southwest Palmyrena, 12 are connected, directly or not,²⁰⁸ with the nearby road, conventionally called *Strata Diocletiana*.²⁰⁹ The forts on the southern slope of the Jebel Rawaq, where is actually located the *Strata Diocletiana*, are nine in total. Even if distinctive in detail they appear to belong to a coherent typological series, apart for the site of al-Basiri, where the very bad conditions of the remains do not allow to formulate confident typological conclusions, and the larger site of Khan al-Manquora.

Their size is quite small, between 0.14 ha to 0.32 ha. The smaller size of Roman forts has usually been related to the smaller size of the army units in Late Antiquity. The recent increasing interest in the studies of Late Antiquity has led to a better knowledge of these presumable later forts (the Early empire ones were huge and standardized, i.e. the playing-card type, see below). It appears now that the Roman Eastern military architecture witnessed, during the period, different forms of forts used contemporaneously.²¹⁰ Moreover, the larger “playing-card” forts, although reasonably defensible when fully manned, would have been impossible to defend with only a minimal garrison; the “new” design may have been a conscious attempt to make forts more easily defensible by a reduced garrison.²¹¹ The typology is: square structure with corner towers and entrance not protected outside by towers, i.e. *quadriburgium* (Type 5).²¹²

In the northeast half of the series, the forts (Khan al-Abyad, Khan al-Hallabat and Khan al-Qattar) display small fan-shaped corner towers (Type 5.1), while in the southwest section (Khan Aneybeh, Khan al-Trab and Khan Abou Shamat) they display square-shaped corner towers (Type 5.2).

These forts appear to be roughly all contemporary: end of 3rd-beginning of the 4th century A.D. Nevertheless, the clear typological distinction between the two subgroups seems to point out two building programs, separate perhaps by a brief period of time. They may be related to two different stages of the nearby road re-assessment or the existence of two distinct teams of architects and workers.²¹³ One operating N-E of Basiri, the other one S-O of it. Perhaps, a garrison stationed in Palmyra built the northern sites while the southern ones were built by a unit based in Damascus or Bosra. Another possibility is that the distinction was functional: if Van Berchem’s

²⁰⁸ Hwenique and Klebiye are not properly along the *Strata Diocletian* (located on the southern slope of the Jebel Rawaq) but they are outposts of it, guarding the passes from the northern to the southern slopes of the Jebel Rawaq. Both sites have not been surveyed, so it’s too dangerous to include them in a typology only with the poor data available.

²⁰⁹ The issue of the role of these forts (and the road) within a general program of military requalification of the frontiers in Late Antiquity will be discussed in chap. 5.

²¹⁰ Genequand 2006b, 13-20.

²¹¹ Gregory 1995-1997:1995, 232.

²¹² For a more detailed description of this class I refer to Lenoir 2011, 297-298.

²¹³ Lander 1984, 255; Bauzou 1989a, 355-356; Lenoir 2011, 361.

correlation of seven of the sites with locations and units listed in the *ND* is correct,²¹⁴ it may be significant that the northern sites seem, at one time, to have been garrisoned mainly by *alae* units, while the southern sites held mainly *cohortes*.²¹⁵

Forts equipped with corner towers, whether of fan or square shape, and with a gate not protected on the outside by towers (Type 5) are all located in the Near East and more specifically in Syria (the only exception Qasr eth-Thuraiyya in Arabia). Moreover, their ramparts, with the only exception of Khan al-Qattar and Khan al-Trab,²¹⁶ are all built according to the same technique: two facings of regular masonry' blocks with mortared rubble core.²¹⁷ However, the ramparts' structure is not strictly linked with a general fort's typology.²¹⁸

An exception within this homogenous system is represented by the Khan al-Manquora fort that strikes for its size (0.81 ha), for its elaborate water catching system and for its typology.²¹⁹ It displays 6 intermediate U-shaped towers, four of them protecting respectively each side of the two gates and fan-shaped corner towers. It is therefore a variant of the type 4.2.²²⁰ These peculiarities can perhaps be attributed to a greater prominence of the site within the road or defensive system, the management of local resources and/or its evolution over time. Most likely a combination of all these reasons.²²¹

Fan-shaped corner towers, as well as intermediate U-shaped towers (Type 2 and 4) are structural features known also in Egypt and in the Danube regions, but their combination in forts with regular structure (square or rectangular) seems to be characteristic of the two provinces of Syria and Arabia.²²² However, the existence of properly provincial types is not connected only with annexed wall structures as corner towers or gate and also they are not a typical Late Antiquity occurrence.²²³ In fact, it has not to be forgotten that Roman military installations had to adapt everywhere to climate, geography and military situation.

The fort of al-Bakhra is located along a secondary stretch of the *Strata Diocletiana* that let to reach (or skip) Palmyra from the south.²²⁴ It is definitely much larger than the other forts connected to the road: 1.5 ha. It performed probably a prominent role that may surprise since it is

²¹⁴ Van Berchem 1952, 13-16.

²¹⁵ Lander 1984, 255. See below and chap. 5.

²¹⁶ The first presents a small regular dry set masonry. The structure of the latter cannot be unequivocally inferred due to contradictory descriptions.

²¹⁷ Lenoir 2011, 377.

²¹⁸ Lenoir 2011, 309.

²¹⁹ See chap. 4.3.2.

²²⁰ For a more detailed description of this class I refer to Lenoir 2011, 295-297.

²²¹ Cfr. chap. 5.4.3.

²²² Some cases have been recovered also in Moesia Inferior (*Abrittus, Libida, Capidava, Troesmis, Dinogetia*) but only in irregular structures forts (Lander 1984, 217-228; 246-252, 255 and Figg. 225, 226, 227, 229, 232).

²²³ Lenoir 2011, 375-376.

²²⁴ See chap. 5.4.2.

located only c. 20 km south of Palmyra. Its fan-shaped corner towers and the two intermediate U-shaped towers protecting the unique entrance, show that, at least at one stage, the building was contemporary to the other forts (late 3rd-beginning 4th century A.D.). However, its typology can be connected to that of the classical forts: rectangular structure fort with towers at the angles (Type 2).²²⁵ This classical structure might be connected with the army stationed there: the *equites promoti indigenae*,²²⁶ an elite corpus of *laterculum maius*.²²⁷

The unique example in the area of the playing-card type (Type 1), which is usually regarded as the typical Roman military fortification, appears to be that of Harbaqa.²²⁸ This type had a rather longer life, from the time of Polybius (3rd-2nd century B.C.) to at least the beginning of the 4th century, but with no standard plan rigidly applied: two forts were never exactly the same.²²⁹ The most constant, and rarely modified, feature, however, was the central position of the *principia*, facing the Y-junction formed by the *via praetoria* and the *via principalis*, at the end of which the entrances were located. The position of other internal buildings was more variable within the general scheme and sometimes the whole orientation changed. Occasionally the overall shape was square rather than rectangular or exceptionally elongated.²³⁰ A ground survey at the Harbaqa fort let to identify an entrance approximately located at 2/3 of the long side but the existence of the *principia* in the middle of fort is not conclusively proved.²³¹ They have been otherwise attested at Khan al-Hallabat.²³²

Watchtowers are frequent throughout the region, but have very seldom been recorded by air photographs. They appear only incidentally on Poidebard's published photographs and the high-level vertical photos are too small in scale to show such small features adequately. This "deficiency" in the air photography has not been covered by any extent by fieldwork and survey on the ground.

In some instances towers were the "eye" of a fort, perched on the surrounding hilltops, as at Khan al-Abyad and Khan Aneybeh. They probably guaranteed optical signals between the forts and at the same time patrolled the nearby road traffic. Those attested at Khan al-Manquora and Harbaqa may, instead, be related to the control of the water resources, since they are located near a dam.²³³

²²⁵ See to Lenoir 2011, 289-292.

²²⁶ According to the *Notitia Dignitatum Or.* 32.22.

²²⁷ The list of the high imperial offices from the 4th century. Lenoir 2011, 360.

²²⁸ Gregory 1995-1997: Lenoir 2011, 285-289.

²²⁹ For a discussion over the origins of this type I and its development within the empire I refer to Gregory 1995-1997: 1995, 39-78, 193-237 and 1996.


²³⁰ Gregory 1995-1997: 1995, 55; Lenoir 2011, 285-287.

²³¹ Lenoir 2011, 88, 287.

²³² Lenoir 2011, 388.

²³³ The latter ones not at the fort itself but near the dam (see chap. 4.3.1).

Sometimes signal-watchtowers were not part of the fort but “stood alone” as at al-Hamra and as attested in the Eastern Egyptian desert.²³⁴ Unfortunately without proper excavations, the chronology of these towers is difficult to determine from the evidences available.

Site nr. 	Modern Name	Ancient Name ²³⁵	Typology	Walls	Dimensions and Extra particular features
22	Harbaqa	<i>Verofabula</i> (?)	1	5	150m x 85m (= 1.27ha) ²³⁶ fort + unspecified buildings 100m x 250m ²³⁷
12	Klebiye	?	4.2 ? 5 ?	-	60 x 50m = 0.30ha
21	Hwenique	?	-	-	This fort is attested only by Poidebard who described it as a square fort without angle towers without giving any further information.
11	Khan al-Abyad	?	5.1	3	42.50m per side = 0.18ha Watchtower
13	Khan al-Hallabat	<i>Beriaraca/Veriaraca</i>	5.1	3	With reinforcement = 52m x side = 0.27 ha <i>Principia</i> have been found only in this site. ²³⁸ The towers are “slightly conical” i.e. tapered and battered. ²³⁹ It is the best-preserved fort also in elevation.
14	Khan al-Qattar	<i>Carnela/Carneia</i>	5.1	4	41m x side = 0.16ha Khan al-Qattar is the only fort to show a moat (6m large), visible on three sides. ²⁴⁰ Cut stones have been used to reinforce corners towers. ²⁴¹

²³⁴ Especially along the road from Myos Hormos to Koptos: Sidebotham 2011, 140-144.

²³⁵ For a summary see Gazetteer 1 a.

²³⁶ Bauzou 1989a, Lenoir 2011.

²³⁷ Genequand 2003a, 2004b.

²³⁸ Lenoir 2011, 342-343.

²³⁹ Poidebard 1934, 48; Gregory 1995-1997: 1996, 202; Lenoir 2011, 84.

²⁴⁰ Lenoir 2011, 87, 305.

²⁴¹ Lenoir 2011, 87, 310.

15	Al-Basiri	<i>Auira/Abira=Abina</i>	-	-	Roman enclosure 50.70 x 35.90m = 1.79ha (?) The remains are too poor and damaged to let an architectural analysis. In any case, they appear to be of Omayyad period.
16	Khan Aneybeh	<i>Nab/Oneutha</i>	5.2	3	48.60 x 39m = 0.18ha Watchtower Cut stones have been used to reinforce the corners towers. ²⁴²
17	Khan al-Manquora	<i>Vallis Alba</i>	4.2 with a variant: instead of round corner towers it displays fan-shaped towers at the corners.	3	90m x side = 0.81m Several watchtowers Cut stones have been used to reinforce the corners towers ²⁴³ .
18	Khan al-Trab	<i>Vallis Diocletiana</i>	5.2	5? 3?	43m per side = 0.18ha
19	Khan Abou Shamat	<i>Thama?</i>	5.2	3	50m per side = 0.25ha
8	Al- Bakhra	<i>Auatha</i>	2	1 ²⁴⁴	152m x 99m = 1.5ha Watchtower ? ²⁴⁵

Table. 2. Typology of the forts

Legend

Typology:

1: Playing-card type

2: Rectangular type fort with towers at the angles.

3: Square forts with *principia* centered in front of the crossroad of the two internal roads

3.1. With curved angles

3.2. With corner towers

4: Fort (almost all square) with corner towers and entrance protected by two towers

4.1. With square corner towers

4.2. With rounded corner towers

4.3. Other forts

5: Forts (almost all square) with corner towers and entrance not protected outside

5.1. With fan-shaped corner towers

5.2. With square corner tower

²⁴² Lenoir 2011, 310.

²⁴³ Lenoir 2011, 310.

²⁴⁴ However, Bauzou 1989a, 340, after his first survey, stated that the rampart is the same type of those of the other *Strata Diocletiana*' forts: Type 3.

²⁴⁵ Musil 1928, 88.

Walls:

- 1: Two facings of medium irregular limestone masonry filled with raw blocks.
- 2: Indefinite structure without rubble core.
- 3: Two facings of small regular masonry with mortared rubble core.
- 4: Small regular dry set masonry.
- 5: Mud-brick walls.

3.4.1.3. Presence of the army in the Southwest Palmyrena

I intend to provide in this paragraph only a brief *excursus* over available data concerning the presence of the army at the military sites considered. The issue of evolution and role of the army in Late Antiquity, especially in the Near Eastern frontier, will be discussed in chapter 5. The interaction of the soldiers with the environment, recourses and local population (both sedentary and nomadic) will be instead discussed in chapter 4.

Apart for two inscriptions, one coming from al-Basiri and the other one from al-Bakhra, we do not have any other epigraphical sources available that help us to locate a garrison in one fort and/or in a certain period. We have, instead, to rely only on a late literary source but in some cases even not on that (as for the Harbaqa fort, Klebiye, Hwenique, Khan Abyad and Khan Abou Shamat).²⁴⁶ the *Notitia dignitatum* (ND).²⁴⁷ According to the *ND Orientis* 32, the majority of the *Strata Diocletiana* forts allocated traditional auxiliary units: *cohortes* (infantry or mixed infantry and cavalry) or *alae* (cavalry). Once more, the only exceptions are two unit of *equites* placed at *Auatha/al-Bakhra* (*promoti indigenae*) and *Abira/Abina/al-Basiri* (*sagittarii indigenae*). A legion (*I Illyricorum*) was located at Palmyra (*ND Or.* 32.30).²⁴⁸

The *Notitia* lists units of *equites promoti indigenae* and *equites sagittarii indigenae* in every ducates of the Near East. Scholars have argued that at least the *equites promoti indigenae* were native regiments of the legionary cavalry later become independent.²⁴⁹ More recently it has been pointed out that these units listed in the *ND* do not show any indication of being connected with a legion or an auxiliary unit. Consequently, it has been suggested that they were units recruited locally having no ties with a legion.²⁵⁰

A recent observation appears to reinforce the traditional idea: chapter 31.30-31 of the *Notitia* lists 2 separate units under the authority of the *dux Thebaidos*: *equites promoti indigenae* (30) and *legio tertia Diocletian, Ombos* (31). According to Seeck's edition the actual place where the

²⁴⁶ For these cases actually, scholars have proposed to identify the first (with a lot of doubts) as *Mons Iovis*, seat of the *Ala I Damascena* (*Or.* 32.33) and the second with *Thama*, seat of the *cohors prima Orientalis* (*Or.* 32.44).

²⁴⁷ For a general discussion above the *Notitia* as an important source for my study see chapt. 2.2.

²⁴⁸ Perhaps already by Aurelian after the defeat of Zenobia and Vaballathus in A.D. 272. The legion is in any case surely attested by A.D. 293, when it was located in the so-called Camp of Diocletian (Kowalski 1997, 44-45).

²⁴⁹ Jones 1964, 57-58.

²⁵⁰ Isaac 1995, 145, followed by Lewin 2002, 93-94.

equites promoti indigenae were stationed in the *Thebais* has fallen from the text. However in a new important study, Brennan has shown that Seeck arbitrarily divided one entry in two. In fact, the best manuscript tradition appears to vindicate a different reading of the text: *equites promoti indigenae legionis tertiae, Ambos*. Consequently, Brennan surmised that all the *equites promoti indigenae* listed in the *ND* in the Near East ducates were legionary cavalry detached from mother legion and possibly the same could be true for the *equites sagittarii indigenae*.²⁵¹ According to the same scholar, the units of *indigenae* were separated from the mother legions in the Diocletian time, not before and not later.²⁵² The omission in the *ND* of the legion to which the *equites indigenae* belonged may be explained with a lack of consistency or with bureaucratic and linguistic variations that are characteristic features of the *ND*. Unfortunately, it is not possible for the *equites indigenae* at al-Basiri and al-Bakhra to recall their supposed original mother legion.

On the other hand, *Auatha*/al-Bakhra is the only case when the evidence from the *ND* matches with that of the epigraphical sources. In fact, an inscription found there reveals that the *equites promoti indigenae* listed in the *ND* at *Auatha* at the end of 4th century A.D., occupied the fort already by the Tetrarchic age.²⁵³ This fact would therefore support Brennan's idea that the units of *indigenae* were separated from the mother legions in the Diocletian time.

The only other epigraphical source available to locate a garrison in a fort comes from al-Basiri. It is an undated funerary inscription commemorating the erection of a tomb for the son of *Laberius Fronto, miles cohors VI Hispanorum*.²⁵⁴

The name of *Laberius Fronto* is unknown but the same cohort is attested in other inscriptions.²⁵⁵

- in a military diploma coming perhaps from the Balkans region,²⁵⁶ dated to A.D. 141-142 and attesting garrisons *quae sunt in Arabia sub Aemilio Caro*,²⁵⁷

²⁵¹ Brennan, 1998, 238-244.

²⁵² Brennan 1998, 243 and Lewin 2004, 230-231.

²⁵³ Bauzou 1989a, 336-337 = Bauzou 1993, 47, Inscr. L, Fig. 7 = *AE* 1993, 1607 = *CIL*, III, 6726? Possible the inscription recalled the foundation of the fort itself for this unit (Lewin 2004, 233).

²⁵⁴ Seyrig 1933a, 166, Fig. 2 = *AE* 1933, 215 = *Inv.* VIII, 206 = As'ad, Deplace 2002, nr. 23. See also the site's sheet for a discussion.

²⁵⁵ *IGR* IV 728 = *CIG* 3902c, coming from Eumenia (Asia) has been wrongly cited by Speidel 709 and Weiss, Speidel 2004, 263 nr. 61 because it does not mention a tribune of *cohors VI hispanorum* but one of the *VII hispanorum* (see Perea-Yébenes 2006, 71 nr. 3).

²⁵⁶ «Das Diplom befindet sich gegenwärtig in Privatbesitz. Woher es kommt, ist nicht bekannt.»

²⁵⁷ *AE* 2004, 01925 = Weiss, Speidel 2004: *Imp(erator) Caesar divi Hadriani f(ilius) divi Traiani / Parthici nepos divi Nervae pronepos / T(itus) Aelius Hadrianus Antoninus Aug(ustus) / Pius pont(ifex) max(imus) trib(unicia) pot(estate) V co(n)s(ul) III p(ater) p(atriciae) / equitib(us) et pedit(ibus) qui milit(averunt) in alis II et coh(ortibus) VI / quae appell(antur) Gaetul(or) veter(ana) et (!) Ulpia droma(dariorum) / Palmyr(enorum) |(milliaria) et I Aug(usta) Thrac(um) et I Thrac(um) c(ivium) R(omanorum) / et I Hisp(anorum) Cyren(aica) et I Aelia class(ica) et II Aure(lia) Thrac(um) et VI Hisp(anorum) et sunt in Ara(bia) sub Aemilio Caro quin(is) et vicen(is) / [pluribusve stipendiis emeritis dimis]s(is) hon(esta) miss(ione) quo[rum] nomina subscripta sunt civitatem Romanam qui eorum non hab(erent) ded(it) [et conubium cum uxoribus quas tunc] / hab(uissent) cum est [civitas iis data aut cum iis quas] / post(ea) dux(issent) du[mtaxat singulis]*. Probable datation is January-July A.D.142.

- in a statue dedicated to Athena-Allat of a *miles cohortis VI hispanorum* at Ein Saharonim (Negev);²⁵⁸
- in an inscription from *Amelia/Ameria* (Umbria) attesting a *praefectus coh(ortis) VI Hispaniae*;²⁵⁹
- in a text coming from Anarzaba (Cilicia) dating probably to end of 1st beginning of the 2nd century A.D. and mentioning *Aemilius Crispus miles* of the *cohors VI Hispanorum*;²⁶⁰
- in an inscription coming from Qasr al-Hallabat (Arabia). This text records the construction of a *castellum novum* in A.D. 213 by four auxiliary units (*milites cohortium VI Hispanorum, I Thracum, V Afrorum Severianae, IIII CR*).²⁶¹ On the basis of this inscription, these regiments are commonly regarded as belonging to the garrison of Arabia at that date.

Considering these epigraphical evidences, it seems quite sure that, at least between Antoninus Pius (A.D. 138-161) and Caracalla (A.D. 198-207), this *cohors* was stationed in Arabia.

Speidel suggested that «since this unit is listed also later, in the *Notitia Dignitatum* as *ala VI Hispanorum* after being upgraded,²⁶² the unit stayed in the province throughout the 3rd and 4th centuries A.D.²⁶³

C. Laberius Fronto's epitaph has generally been cited as a proof for a pre-Diocletian military unit's presence at al-Basiri during the 2nd century A.D.²⁶⁴ However, in the light of the other above mentioned evidences for the *cohors VI Hispanorum*, it is more likely that this unit was there only temporary, perhaps during one of its movements.²⁶⁵

No evidences, apart for the *ND* list, are available for the units located at the other fort of the *Strata Diocletiana*. It is only possible to notice that from north to south, the first two forts (Khan al-Hallabat and Khan al-Qattar) allocate *alae, noua Diocletiana* and *I Damascena / II Alamannorum / I Francorum* respectively.²⁶⁶ Al-Basiri, as stated above, with its cavalry unit of *equites sagittarii indigenae* represents a “watershed”. Indeed, the last four forts (Khan Abeybeh, Khan al-Manquora, Khan al-Trab and Khan Abou Shamat),²⁶⁷ based *cohortes, V Pacata/Pacta*

²⁵⁸ *AE* 1993, 1652: Τῆς Κυρίαῖς Ἀθηνᾶς | ἐπόησεν ἐκ τῶν ἰ(δίω)ν Μ(ἄρκος) Α|ΝΓΟΛ. *Mil(es) coh(ortis) VI Hisp(anorum)*. It is dated 2nd-3rd century A.D. but the author does not exclude a post-Tetrarchic date.

²⁵⁹ *CIL*, XI, 4376. The inscription is undated and does not report the name of the *praefectus*.

²⁶⁰ *AE* 1990, 00995 = IK, 56, 71 = *AE* 2006, 01553: [.] *Aemilio / Crispo mil(iti) / coh(ortis) VI Hisp(anorum), I(centuria) Romani, / M(arcus) Domitius [---]*.

²⁶¹ *ANRW* II 8, 706; Speidel 1977, 706; Kennedy 2000, 29-31. It is not sure that the text refers to Qasr al-Hallabat rather than being a reused stone imported from elsewhere.

²⁶² *Or.* 37.26: at *Gomoha (Dux Arabiae)*.

²⁶³ Speidel 1977, 709.

²⁶⁴ See below the site's sheet.

²⁶⁵ For other evidences of soldiers transiting through the region see Yon 2008, 136-141.

²⁶⁶ Depending if Khan al-Qattar is identified with *Mons Iovis, Neia* or *Cunna* of the *ND*.

²⁶⁷ If it is right to consider it the *Thama* of the *ND*.

Alamannorum,²⁶⁸ *I Iulia Lectorum*, *II Aegyptiorum* and *I Orientalis*, respectively. Is this fact connected with a different fort's typology or function of them as seen above? Unfortunately it is impossible to say.

Bauzou noted that at Khan Aneybeh, the *cohors quinta Alamannorum* garrisoned there bears actually an unusual epithet for a military unit: *pacata*, which means "peaceful/turned in peace". For this reason he proposed to consider it as a mistake: it should be read **pacat(orum) Alamannorum*, referring with this epithet to the Alamanni submitted to Rome.²⁶⁹ This contingent, transferred to Syria, was not the unique case: as stated above, Khan al-Qattar may have stationed another unit of Alamanni (*ala I Alamannorum*). It is not possible to establish when these units were withdrawn from their original area but it has been hypothesized to connect it with what reported by the *Historia Augusta*: in A.D. 275, after the death of Aurelian, the Alamanni and the Franks burst into Gaul, where for three years they enjoyed almost free rein to pillage, living off the land. They were brought to terms by Emperor Probus, who arranged the return of prisoners and booty. He allegedly settled 400,000 tribesmen and extracted 16,000 men for the army who dispersed in small companies.²⁷⁰

An even more difficult task is also trying to establish the actually size of these attested units and their relation with a fort's size. It was generally believed that in Late Antiquity, with the reduction in size of the single units, forts were much smaller but, as already pointed out in the previous paragraph, this is not automatic anymore.

In fact, going on size alone and assuming that all these forts are those listed in the *Notitia Dignitatum Orientis*, it would be more logical for the *equites* to be located at the slightly larger fort of Khan al-Manquora (*Vallis Alba*) rather than at al-Basiri (*Abira/Abina*). Or instead, was the *cohors I Iulia Lectorum* more important than the other ones located all in smaller forts,²⁷¹ or were present at Khan al-Manquora two different stages of development?²⁷² The variables are too numerous. It is not possible to establish which rooms were actually used as sleeping quarters and considering the possibility of doubling accommodation, by the use of upper storeys, any estimates of garrison's size is pointless.²⁷³ This is the case for example at Khan al-Hallabat, where the evidence (a staircase covered by an arch inside the *principia*) suggested the presence of an upper

²⁶⁸ Both versions are found in the manuscripts of the *ND*.

²⁶⁹ Bauzou 1993, 41 n. 27.

²⁷⁰ SHA, *Prob.* 15, 1-7. Bauzou 1993, 41, n. 27.

²⁷¹ Kennedy, Riley 1990, 182.

²⁷² As cautiously hypothesized by Bauzou 1989a, 303-304. One, the smaller fortress, would have been contemporary to the other nearby forts.

²⁷³ Gregory 1995-1997: 1995, 86.

floor, maybe timbered.²⁷⁴ Furthermore, all these forts feature great towers which now appear projecting partially or entirely and are often massive both in structure and elevation. On smaller forts they normally appear at the angles, while on the larger there are also interval towers on the curtain walls. These towers could also have provided extra space for store and accommodation.²⁷⁵ Moreover, the question of whether soldier's wives and family lived inside forts or not, further, drastically affects the calculations of garrison's size derived only from the fort's size. For example *canabae* have been hypothesized for Khan al-Manquora.²⁷⁶ It has also not to be forgotten that movements of units or part of them happened were quite frequently along all the history of the roman army. Therefore, it is quite likely that size and arrangement of the forts, do not straightly coincide with a certain military unit or a certain kind of unit permanently settled there, but instead, to the function it had to carry out.²⁷⁷ To conclude, in view of the large number of potential variables considered and problems arose, the evidence for the tactical distribution of the military forces within the region is very patchy and can be only speculative.

3.4.2. Roman military installations in the Southwest Palmyrena²⁷⁸

3.4.2.1. The Harbaqa fort (SITE NR. 22 – Gazetteer 1.a-b.)

ANCIENT NAME OF THE SITE: *Verofabula* (*ND Or.* 32.28)²⁷⁹

MODERN NAME OF THE SITE: Harbaqa

LOCATION: 34°16'24.92"N 37°37'42.47"E (around 70 km southeast of Palmyra).²⁸⁰ It is located on the left bank of the Wadi Harbaqa, around 3 km from the dam, which bears the same name.²⁸¹

ERA: Roman time (around the 1st century A.D. on the architectural basis) and Omayyad

SURVEYS: M. Lenoir and T. Bauzou 1990; D. Genequand 2002

REMAINS: fort

IMAGES: Bauzou 1989a, Pl. 64-65; Genequand 2003a, Figg. 45-47

PLAN: Poidebard 1934, Pl. XXXII (Late fort); Bauzou 1989a, Pl. 63; Lenoir 2011, Fig. 42; Genequand 2003a, Fig. 44; Genequand 2004b, Fig. 16

²⁷⁴ See below site's sheet.

²⁷⁵ Kennedy, Riley 1990, 189.

²⁷⁶ See site's sheet.

²⁷⁷ Lenoir 2011, 345.

²⁷⁸ For a systematic survey of the water resources and infrastructures available at each military site I refer to 4.3.1-4.3.2.

²⁷⁹ Seat of the *Ala I Saxonum* (Mouterde 1930-1931, 231). For a summary see Gazetteer 1.a.

²⁸⁰ From Google Earth image.

²⁸¹ See chap. 4.3.1

REFERENCES: Bauzou 1989a, 323-325, Pl. 63-65; Genequand 2003a, 58-59, Figg. 44-47; Genequand 2004b, 20-21, Fig. 16; Lenoir 2011, 88-89, Fig. 42; Mouterde 1930, 231; Poidebard 1934, 55, Pl. XXXII²⁸²

COMMENT: The fort is located near (4-5 km) the transversal route, in use probably for long time, linking the two slopes of the Jebel Rawaq.

The site has been surveyed by Bauzou and Lenoir in June-July 1990.²⁸³ They recorded a fort of rectangular form (150 m x 85 m), covering an area of 1.27 ha, with its long sides orientated N/N-E and S/S-W and curved angles. The rampart was in very poor condition (the remains are only at surface level) but apparently it was 2-3 m large. A gate, protected by two internal towers, has been recognized on the west side.²⁸⁴ Perhaps there was also an entrance along the east side, but the later fort has effaced it. No internal buildings have been found. North and east of the site, houses with more rooms have been detected and farther northeast, beyond the houses, two garbage dumps. The first is 10-15 m long, 6 m large and 2 m high. The second 30-40 m long, 10 m large and 1 m high.²⁸⁵

On the basis of the pottery collected there and inside the fort, scholars have dated the fort's construction to the middle of the 1st century A.D.²⁸⁶ It may have performed the double function of controlling the route and the nearby dam.²⁸⁷ In the southeast angle of the fort a later rectangular smaller fort has been surveyed.²⁸⁸ It is difficult to establish the plan and the construction's date since clandestine excavations have affected it.²⁸⁹ However, from aerial photos and at ground level, 8 projecting towers (4 at the angles and 4 at the middle of sides) have been detected.²⁹⁰ According to the scholars, the fort appears to have been abandoned during the 5th century A.D.

Genequand has surveyed the site again in 2002.²⁹¹ He stated only the presence of one main fort of 66 m x 60 m,²⁹² and unspecified remains of building around it covering a total surface of diameter of 100 x 250 m. He has also detected a small and much damaged building near the southern side

²⁸² He has, however, identified only the late fort.

²⁸³ Bauzou visited already the site (along with the other forts of the *Strata Diocletiana*) before to complete his PhD thesis (1989) without making a systematic survey. Bauzou 1989a, 9.

²⁸⁴ Dividing it in two unequal parts: the north stretch is approximately 2/3, while the south one 1/3. Bauzou 1989a, Lenoir 2011.

²⁸⁵ Bauzou 1989a, 324.

²⁸⁶ For the pottery's list collected during the survey of Lenoir and Bauzou (July 1990) see Lenoir 2011, 88-89.

²⁸⁷ Bauzou 1989a, 325; Lenoir 2011, 88; Meyer 2014 (forthcoming).

²⁸⁸ Dimensions: 52 m x 60 m. according to Bauzou 1989a and Lenoir 2011. Scholars could not establish if the site had lasting occupation or a re-occupation in Late Antiquity.

²⁸⁹ The plan offered by Poidebard 1934 (Pl. XXXII) did not find confirmation on a ground level, especially regarding the door's location.

²⁹⁰ Bauzou 1989a, 323.

²⁹¹ Genequand 2003a, 58-59; Genequand 2004b, 20-21.

²⁹² Maybe the smaller one of Bauzou and Lenoir?

of the fort and many garbage dumps.²⁹³ These latter have provided Roman pottery attesting a Roman occupation of the site for patrolling the northern slope of al-Barde's pass (balanced by al-Basiri on the southern one).²⁹⁴ A small building, just south of the fort, has being instead dated to 7th-8th century A.D., proving a re-occupation of the site in the Omayyad period related to Qasr al-Heir al-Gharbi and the nearby dam.²⁹⁵

One consideration has to be given: if we compare Genequand's site description with that given by Bauzou and Lenoir, it is not clear the exact equivalence of the recovered buildings. However, all scholars agree to attest a Roman presence on the site.

3.4.2.2. Southwest

Klebiye (SITE NR.12)

ANCIENT NAME OF THE SITE: unknown

MODERN NAME OF THE SITE: Klebiye

LOCATION: no exact coordinates available. Around 30 km southwest of Palmyra

ERA: Late (?) Roman

SURVEYS: A. Musil 1912

REMAINS: fort

IMAGES: none available

PLAN: Musil 1928, Fig. 32

REFERENCES: Gregory 1995-1997: 1996, 255-256, 1997, E.26.1; Musil 1928, 135, Fig. 32; Poidebard 1934, 49²⁹⁶

COMMENT: The fort dimensions are *c.* 60 m x 50 m, covering an area of 0.30 ha, with walls 1.5-2 m large and round corner towers (diameter *c.* 11 m).²⁹⁷ Musil, during his very short stop (only 30 minutes) at the site, stated also N-E of the fort «a rampart 464 paces long from south to north by 400 paces wide. East of it there were visible the foundation walls of ruined houses, an olive press

²⁹³ Genequand 2003a, 58: «un petit édifice construit en dalles de gros appareil a fait l'objet il y a peu de temps d'une fouille sauvage de plus grande ampleur (fig. 47). Les murs sont conservés sur au moins 1.60 m en élévation (deux assises), mais son plan se laisse mal appréhender. Parmi les déblais de ce semblant de fouille, on a pu récupérer de nombreux fragments de grosses jarres et d'amphores, des fragments de tuiles verdâtres semblables à celle de Qasr al-Hayr al-Gharbi, ainsi que deux morceaux de calcaire sculpté: un fragment de colonnette de quelques centimètres de diamètre et un fragment d'un tout petit chapiteau au décor très fin».

²⁹⁴ Genequand 2003a, 59. The pottery was not studied in detail but according to the archaeologist dates to Roman/Byzantine period.

²⁹⁵ For an Omayyad's construction of the Harbaqa dam see chap. 4.3.1.

²⁹⁶ He accepted its existence but only gives it a passing mention as the destination of the pass from Khan al-Abyad.

²⁹⁷ Gregory 1995-1997: 1996, 255.

and a fragment of column seventy centimetres in diameter».²⁹⁸ It is linked to Khan al-Abyad and Khan al-Hallabat by a pass through the mountains.

Hwenique (SITE NR. 21)

ANCIENT NAME OF THE SITE: unknown

MODERN NAME OF THE SITE: Hwenique

LOCATION: no exact coordinates available. Around 36 km southwest of Palmyra

ERA: Roman?

SURVEYS: A. Poidebard 1930.

REMAINS: fort

IMAGES: none available

PLAN: none available

REFERENCES: Musil 1928, 94; Poidebard 1934, 48

COMMENT: The site was quoted by Musil but not described. According to Poidebard, who does not provide dimensions of the fort, stating only its square shape without corner towers, Hwenique guarded a pass through of the Jebel Rawaq toward Ain al-Beyda and al-Hawa.²⁹⁹

Khan al-Abyad (SITE NR.11 – Gazetteer 1.a-b.)

ANCIENT NAME OF THE SITE: unknown; perhaps *Mons Iovis* (*ND Or.* 32.33)³⁰⁰

MODERN NAME OF THE SITE: Khan al-Abyad; also called Khan al-Trab (Poidebard 1934, 49)

LOCATION: 34°24'42.53"N 38° 7'19.11"E = 34.411814N 38.121975E (around 25/26 km southwest of Palmyra)

ERA: Late (?) Roman

SURVEYS: A. Poidebard 1925-32; T. Bauzou late 1980s; D. Morandi Bonacossi and M. Cremaschi 2010

REMAINS: fort (or fortified well?) + Roman watching tower at the top of the hill³⁰¹

IMAGES: Bauzou 1989, Pl. 70; Google Earth; Poidebard 1934, PL. XLIII.2

PLAN: Poidebard 1934, Pl. XXXIX; Lenoir 2011, Fig. 34

²⁹⁸ Musil 1928, 135.

²⁹⁹ Poidebard 1934, 48.

³⁰⁰ Seat of the *Ala I Damascena* (Bauzou 1989a, 332). For a summary see Gazetteer 1.a.

³⁰¹ PLM 034-Geoarchaeological Survey Project of Prof. D.Morandi Bonacossi and M. Cremaschi.

REFERENCES: Bauzou 1989a, 331-332, Pl. 70; Gregory 1995-1997: 1996, 199-200, 1997, E3.1; Lenoir 2011, 83, Fig. 34; Poidebard 1934, 49, Pl. XXXIX, XLIII.2

COMMENT: The fort presents a similar construction to the nearby Khan Hallabat (see below): square structure of *c.* 42.50 m per side, with a total covered surface of 0.18 ha and orientated N-E/S-W. It has small-fan projecting towers at the angles (but no intermediate ones) that can be included in a square of 9.20 m per side. The rampart is large 2.40 m on the three sides without entrance, while on the southern one, slightly larger (2.60 m). It is composed of two facings of small regular masonry with mortared rubble core (Type 3). Poidebard's plan shows, oddly, 4 gates, one on each side, but only one entrance (3.70 m large) has been found in the middle of the northeast side.³⁰² It is difficult to establish a history of the settlement since also no inscription at the site or nearby has been found.³⁰³ Bauzou proposed that it might have been a simple fortified well.³⁰⁴

Khan al-Hallabat (SITE NR. 13 – Gazetteer 1.a-b.)

ANCIENT NAME OF THE SITE:³⁰⁵

Epigraphically attested: *Beriaraca*³⁰⁶

Literary attested: *Ueriaraca* (*ND Or.* 32.34)

MODERN NAME OF THE SITE: Khan al-Hallabat³⁰⁷

LOCATION: 34°20'50.77"N 38° 4'19.22"E = 34.347436N 38.072006N (around 30-31 km southwest of Palmyra)

ERA: Late (?) Roman

SURVEYS: A. Musil 1908; M. Dunand 1929; A. Poidebard 1930; K. al- As'ad 1978 (followed by restoration); M. Lenoir and T. Bauzou 1990

³⁰² It seems actually that Poidebard did not visit the site. Bauzou 1989a, 331; Gregory 1995-1997: 1996, 200; Lenoir 2011, 83.

³⁰³ In fact, *IGLS* V, 2704 has not been recovered here but in site with a same name located south of Qaryatain along the "middle route" to Damascus. See chap.5.4.1.

³⁰⁴ Bauzou 1989a, 331.

³⁰⁵ For a summary see Gazetteer 1.a.

³⁰⁶ The ancient name of *Beriaraca* could derive from the Aramaic: *bira* (well) + *iaraq* (green) demonstrating the presence of crops in the surrounding area. Bauzou 1989a, 330; 1993,

³⁰⁷ According to testimonies collected by Musil in 1928, local people had given this name to the site, which means "Castle of the woman who milks", as it was said that an old woman of al-Bakhra used to come every day to milk goats and sheep grazing in the surrounding area. Bauzou (1993, 44-45) explained the modern name as being a plural from the root *halib* (milk). The term is interpreted as "the place where the cattle are milked" (interpretation bound to pastoral lifestyle of fort's inhabitants in the modern era). Other names coming from the same root (Halab, Halabiyyeh...) are very frequent in the Middle East. Such names already existed in the pre-classical antiquity (as the case of Halab), and could as well refer to the white color or to pastoralism.

REMAINS: fort

IMAGES: from the Palmyrena Project website of the University of Bergen:

<http://www.hist.uib.no/antikk/dias/Syria/KhanHallabat/index.html>; Bauzou 1989a, Pl. 69; Gertrude Bell Archive, Album Y_484-500; Google Earth; Lenoir 2011, Figg. 37, 39 (*Principia*); Poidebard 1934, Pl. XL, XLII.1-4

PLAN: Lenoir 2011, Figg. 35-36, 38 (*principia*); Musil 1928, Fig. 25; Poidebard 1934, Pl. XLI

REFERENCES: Bauzou 1989a, 329-330, Pl. 68-69; Bauzou 1993, 33-34, 44-45; Burton 1872, 364; Dunand 1931, 241, 247; Bounni, Al-As'ad 1989, 127; Kalinka 1900, 23-24; Kennedy, Riley 1990, 203-204, Figg. 151-152; Gregory 1995-1997: 1996, 201-203, 1997, E4.1-2; Lander 1984, 201; Lehmann 2002, 268 (366.266), Tav. 20 nr. 16; Lenoir 2011, 84-85, 342-343 (*principia*), Figg. 35-39; Musil 1928, 91-94, Fig. 25, Poidebard 1934, 48-49, Pl. XL-XLII; Van Berchem 1952, 13

COMMENT: Khan al-Hallabat/*Beriaraca* was a stopping point along the road leading to Damascus, the so-called *Strata Diocletiana*, as testified by a group of milestones found *in situ*, 5 km eastward.³⁰⁸ It represented a crossroad between a stretch of this road leading south to Khan al-Qattar/*Carnela* (c. 28.2 km), one leading north to Palmyra (c. 28 km) and one leading east toward al-Bakhra/*Auatha* (c. 16 km).

The fort has an almost regular square structure of 50 m x 50.50 m, covering a surface of 0.25 ha in the first stage, while the wall's reinforcement increased it to 51.75 m x 52.50 m (total area = 0.27 ha). The internal surface remained the same: 44.50 m x 46 m.³⁰⁹ The unique entrance, located in the middle of the east side, orients the camp E/N-E and W/-S-W.³¹⁰ It was originally 3.20 m large. After the wall reinforcement the entrance has been reduced to 2.50 m. There are four small-fan projecting towers at the angles. Three towers (S-E, N-E, S-W) have same dimension: they can be included in a square of 8.5 m per side and they project in the walls for 6.25 and 7 m. The southeast one, instead, is bigger: it can be included in a rectangular of 11.25 m x 10 m, projecting for 5 and 7.75 m. This fact is probably due to the presence of a well inside of it.³¹¹ The towers appear to be "slightly conical", i.e. tapered and battered,³¹² but contrary to what is stated by Poidebard, they are

³⁰⁸ Bauzou 1989a, 286-291 nr. 93-109; 1993, 44-45; a variant *Beriarac* in *CIL*, III, 14177/4). For the road see Chap. 5.4.3.

³⁰⁹ Lenoir 2011, 84. Musil 1928, 92-93: 49 m², while Poidebard 1934, 48: 47 m², area 0.16 ha, wall of c. 2.5 m with an additional meter added to the outside.

³¹⁰ It is usually east-west. Lenoir 2011, 84.

³¹¹ *Idem*.

³¹² Poidebard 1934, 48; Gregory 1995-1997: 1996, 202; Lenoir 2011, 84.

contemporary to the first stage of the fort.³¹³ The rampart is from 3.20 to 3.60 m large but this is a result of a doubling of the primitive wall (large from 2 to 2.30 m). Both stages show same structure: double facings of small regular masonry filled with stones and secured by lime mortar (Type 3). The fortification walls are still very well preserved in elevation (up to 8 m) and conserved the wall-walk with two access stairs. The survey of Bauzou and Lenoir (June-July 1990) showed that those stairs included two perpendicular flights:³¹⁴ access to stairs was parallel to the axis of the gate and two pillars rear of the entrance served as support to them.³¹⁵

Among all the forts included in this survey the *principia* have been found only at Khan al-Hallabat. In the middle of the west wall, at the end of the main internal road, flanked by barrack buildings and therefore located along the axis of the fort, there is in front of the gate a two floor building which reproduces “in miniature” the classical structure of the *principia*: a room elongated perpendicular to the fort’s axis and opened toward the road by a monumental gate (3 m wide) gives access, through a staircase covered by an arch, to an upper floor, closed by two symmetrical buildings. Gregory suggested the possibility of timbered upper floors due to beam seating remains.³¹⁶ North of this structure, two other rooms could possibly have been the areas used more specifically for administrative purposes and constituted a decentralized annex.³¹⁷

Scholars agree to identify Khan al-Hallabat with *Ueriaraca* of the *Notitia Dignitatum Orientis* (32.34), seat of the *Ala noua Diocletiana*, under the control of the *Dux Phoenicis*.³¹⁸

Few pottery samples have led Lenoir to suggest a site’s occupation between the end of 3th century A.D. and the beginning of the 5th century A.D.³¹⁹

Khan al-Qattar (SITE NR.14 – Gazetteer 1.a-b.)

ANCIENT NAME OF THE SITE:³²⁰

Epigraphically attested: *Carnela*³²¹

³¹³ Lenoir 2011, 84.

³¹⁴ Bauzou visited already the site (along with the other forts of the *Strata Diocletiana*) before to complete his PhD thesis (1989) without making a systematic survey. Bauzou 1989a, 9.

³¹⁵ For the stairs see Musil 1928, Poidebard 1934, Gregory 1995-1997. For additional observation of Bauzou and Lenoir see Lenoir 2011, 84.

³¹⁶ Gregory 1995-1997: 1995, 104.

³¹⁷ Already Musil (1928, 92) described «a court in the middle of which lies a heap of débris from several ruined chambers». For a precise description of the *principia* see Lenoir 2011, 84-85, 252-253 and Figg. 36, 38. For the other internal building Poidebard’s plan (1934, Pl. XLI) and Lenoir 2011, 85.

³¹⁸ Bauzou 1989a, 329-330, Pl. 68-69; Bauzou 1993, 33-34, 44-45; Dunand 1931, 241, 247; Bounni, As’ad 1989, 127; Kalinka 1900, 24; Kennedy, Riley 1990, 203-204, Figg. 151-152; Gregory 1995-1997: 1996, 201-203, 1997, E4.1-2; Lehmann 2002, 268; Lenoir 2011, 84-85; Poidebard 1934, 48-49, Pl. XL-XLII; Van Berchem 1952, 13.

³¹⁹ Lenoir 2011, 85.

³²⁰ For a summary see Gazetteer 1.a.

³²¹ According to different readings of the inscriptions we have also *CARNEIA* (Dunand 1931) or *GARNELA* (Mouterde 1930-1931). The name may derive from the Aramaic **Qarn el* or the horn (in the sense of the top) of the mountain.

Literary attested: *Mons Iovis* (ND Or. 32. 33),³²² *Neia* (ND Or. 32.36), *Cunna* (ND Or. 32.35)

MODERN NAME OF THE SITE: Khan al-Qattar, Qasr Naqnaqiyeh,³²³ Haneyzîr,³²⁴ Bordj el-Salib,³²⁵ Chàn Abù Gâtûr³²⁶

LOCATION: 34°15'25.74"N - 37°47'8.38"E = 34.25715N 37.785661E (around 50 km southwest of Palmyra)

ERA: Late (?) Roman and Islamic

SURVEYS: M. Dunand 1929; A. Poidebard 1930; T. Bauzou late 1980s; D. Morandi Bonacossi and M. Cremaschi 2010

REMAINS: fort

IMAGES: from the Palmyrena Project website of the University of Bergen:

<http://www.hist.uib.no/antikk/Dias/Syria/Khan%20el-Qattar/index.htm>; Bauzou 1989a, Pl. 67;

Google Earth; Poidebard 1934, Pl. XXXVIII

PLAN: Poidebard 1934, Pl. XXXIX

REFERENCES: Bauzou 1989a, 326-328, Pl. 68-69; Bauzou 1993, 44; Calvet, Geyer 1992, 100-105, Fig. 59; Dunand 1931, 241; Gregory 1995-1997: 1996, 206-207, 1997, E6.1; Kennedy, Riley 1990, 204-205, Figg. 153- 154; Lander 1984, 248; Lenoir 2011, 87, Fig. 41; Musil 1928, 241, 253; Poidebard 1934, 48, Pl. XXXVIII-XXXIX; Van Berchem 1952, 16

COMMENT: The site was located along the *Strata Diocletiana* and nowadays is 3 km north of the mining complex of Khneyfiss.³²⁷

The fort appears to be of square dimensions (41 m per side), covering a total surface of 0.16 ha. The orientation, given by the entrance located in the middle of the east side and large between 3 and 3.50 m, is E/S-E and W/N-W.³²⁸ The angles have small-fan towers that can be included in a square of 12 x 12 m and projecting on the wall for 8.50-9 m. The trapezoidal rooms inside the towers are accessible through an opening in the diagonal axis and are equipped with three loopholes.³²⁹ The rampart of small regular dry set masonry (Type 4) is 2.50 m large. Stone cut

³²² It would be the Latin translation of the Semitic * *Qarn el* meaning “sommet du dieu”.

³²³ PLM 018- Geoarchaeological Survey Project of Prof. D. Morandi Bonacossi and M. Cremaschi.

³²⁴ Poidebard 1934, 48.

³²⁵ According to Dunand 1931, 583 Bordj el-Salib (“the tower or the fort of the cross”) was the name of the fort, while al-Qattar, the mountain where it leans against. However, as stated by Bauzou 1989a, 328, 1993, 43, no crosses have been found on the site. They may have been a reference to a Christian inscription now disappeared.

³²⁶ Moritz 1889, 15.

³²⁷ Calvet, Geyer 1992, 100 n. 3. For al-Qattar as resting point along the so-called *Strata Diocletiana* see chap. 5.4.3.

³²⁸ It is usually east-west. Lenoir 2011, 84.

³²⁹ Bauzou 1989a, 326, Gregory 1995-1997: 1996, 207; Lenoir 2011, 87; Poidebard 1934, 48.

blocks have been used to reinforce the corners of the intermediate towers.³³⁰ Khan al-Qattar is the only fort to show a moat (6 m large), running along three sides.³³¹ Internal structures are buried and indistinguishable, completely covered by recent Bedouins' enclosures.³³² North and east of the fort, arasements of stone structures with orthogonal walls (some of them more than 20 m long) are distinguishable in the aerial view of the site published by Poidebard,³³³ but they seem to be nomadic camps rather than ancient buildings.³³⁴ West of the fort, in the Muslim cemetery, a leveling of small structures, orientated E-W, is still visible. They present walls with double facing and most of them displayed an apse orientated south, probably a *mirhab*.³³⁵ The tombs, small but much more elaborated than simple Bedouin's tombs, have been pillaged. Three Latin inscriptions have been found there.³³⁶

The site has been identified alternatively with *Mons Iouis* (seat of the *Ala Prima Damascena*),³³⁷ with *Neia* (seat of the *Ala prima Alamannorum*)³³⁸ or with *Cunna* (seat of the *Ala prima Francorum*)³³⁹ of the *Notitia Dignitatum Orientis*.

Al-Basiri (SITE NR.15 – Gazetteer 1.a-b.)

ANCIENT NAME OF THE SITE:³⁴⁰

Epigraphically attested: *Auira*³⁴¹

Literary attested: *Abira/Abiraca* (*ND Or.* 32.9) or/and *Abina* (*ND Or.* 32.24); *Aureia* (*Ptol. Geog.* 5,15,24)

MODERN NAME OF THE SITE: al-Basiri, al-Busayra

LOCATION: 34° 9'13.81"N -37°35'36.07"E = 34.153836N 37.593353E (around 80 km southwest of Palmyra)

ERA: Roman and Omayyad

SURVEYS: A. Musil 1912; M. Dunand 1929; A. Poidebard 1930; T. Bauzou late 1980s; D. Genequand 2002

³³⁰ Gregory 1995-1997: 1996, 207; Lenoir 2011, 87, 310; Poidebard 1934, 48.

³³¹ Lenoir 2011, 87, 305.

³³² Bauzou 1989a, 302, 326; Calvet, Geyer 1992, 100-101; Dunand 1931, 241; Lenoir 2011, 87.

³³³ Poidebard 1934, Pl. XXXIII; Bauzou 1989a, 326.

³³⁴ Lenoir 2011, 87.

³³⁵ Bauzou 1989a, 327.

³³⁶ Bauzou 1989a, nr. 079-081 (the last one perhaps non *in situ*); 1993, 42 Inscr. I. Cfr. Appendix.

³³⁷ L. 32.33: Bauzou 1993, 43; Lenoir 2011, 87.

³³⁸ L. 32.36: Bauzou 1989a, 328; 1993, 44; Lenoir 2011, 87; Van Berchem 1952, 16.

³³⁹ L. 32.35: Kennedy, Riley 1990, 204; Bauzou 1989a, 328.

³⁴⁰ For a summary see Gazetteer 1.a.

³⁴¹ «On pense à l'araméen birah, le château, la résidence ou bien, en raison de la présence sur le site de nombreux puits, à l'araméen birâ: la station d'eau», Bauzou 1993, 43. It has been read initially as *AUIRA[CA]* by Dunand 1931, 247, 430.

REMAINS: a very ruined fort probably of Omayyad period

IMAGES: from the Palmyrena Project website of the University of Bergen:

<http://www.hist.uib.no/antikk/Dias/Syria/Al-Basiri/index.htm>; CORONA 1107- 1122Aft (July 31 1969) / 1105-1009Fore (Nov 4, 1968); Google Earth (bad resolution); Poidebard 1934, Pl. XXX.1

PLAN: Genequand 2003a, Fig. 35; Genequand 2004a, Fig. 17; Musil 1928, Fig. 30; Poidebard 1934, Pl. XXXI

REFERENCES: Bauzou 1989a, 315-318, Pl. 59; Bauzou 1993, 42-43; Dunand 1931, 241; Genequand 2003a, 52-55, Figg. 35-38; Genequand 2004b, 22-24, Fig. 17; Gregory 1995-1997: 1996, 208-209; Lander 1984, 240, 255; Lehmann 2002, 83 (322.235), Tav. 20 nr. 3; Musil 1928, 129-131, Fig. 30; Poidebard 1934, 47, Pl. XXX-XXXI

COMMENT: The site of al-Basiri is located, along the *Strata Diocletiana*, at the southern outlet of a pass that through al-Barde and the site of Harbaqa (fort), connected it to Qasr al-Hair al-Gharbi.³⁴² The area is very rich on water since many *wadis* coming from the higher mountains south and east of al-Basiri gathered there. Therefore, it represented a crucial crossroad and water resource point in the region as it is still today.³⁴³

The remains, in very bad conditions also due to an intense activity of clandestine excavations, consist on a fort and a larger outdoor enclosure encompassing most of the building' remains. The fort occupies the center of it. It is built with small regular units of limestone and, to a lesser extent, basalt. It shows two stages of construction: the oldest is of rectangular shape (44.70 x 34.60 m) and seems to be organized around a central courtyard around whose rooms are now barely noticeable. The four corners are equipped with round (three-quarter circle) towers, with an average diameter of 9 m. Each tower contains a room accessible by an entrance at the corner of the wall.

The second stage is distinguishable in a doubling of the south wall and southwest, northwest and northeast towers, as well as new walls and a gate built in the west side. These changes increased the fort dimensions up to 50.70 m x 35.90 m and the diameter of towers to 11 m. A gate is clearly visible in the center of the west side, within the second stage masonry. It is therefore likely that there has already been one at this location in the first phase.³⁴⁴ Already Bauzou, despite old scholarship that since Musil and Poidebard's works,³⁴⁵ have considered al-Basiri a Roman fort,

³⁴² If Qasr al-Heir al-Gharbi can be identified with *Heliariamia* of the *Tabula Peutingeriana*, this transversal road-connection was the easier link between the southern and northern roads from Palmyra to Damascus. See chap. 5.

³⁴³ Nowadays it is crossed by a railway (with a station at al-Basiri) and a route connecting Homs and Baghdad.

³⁴⁴ Musil and Poidebard, both located a gate on the eastern side, in an area that has recently been bulldozed. It cannot be excluded that the building has had two opposite doors.

³⁴⁵ Musil 1928, 129-130; Poidebard 1934, 47.

suggested that the actual remains probably belonged to the Omayyad period.³⁴⁶ This fact has been proved by Genequand's results, especially with the discovery of a mosque just south of the fort but included in the second enclosure and the analysis of the architectural structure of the towers, more similar to small Omayyad buildings in the Djazirah rather than to Roman military structures.³⁴⁷

Notwithstanding the fact that probably the actual remains on the site have to be ascribed to the Omayyad period, it is, however, not wrong to presume a military occupation of the site in Roman time at last for the late period. In fact, this can be proved by the presence of milestones giving the actual ancient name of the site: *Auira*.³⁴⁸ This toponym has been identified with *Abira/Abiraca*³⁴⁹ or with *Abina*,³⁵⁰ listed in the *Notitia Dignitatum Orientis* as seats of the *Equites sagittarii indigenae*. Bauzou suggested an original name *Auira* for both of them.³⁵¹

Genequand himself agrees with the possibility to recognize in the large enclosure surrounding the fort, the remains of the older Roman fort. Its dimensions and features (wall 2.20-2.70 m large, built of irregular raw of limestone masonry, covering a surface of 1.79 ha, with a gate in the centre of the west side) «sont proches de ce que l'on connaît ailleurs pour des unités de cavalerie et le mur est assez large pour avoir été une fortification dont une partie des matériaux de construction auraient été remployés pour édifier le petit fort».³⁵² Therefore, the hypothesis of a succession at al-Basiri of a Roman fort and a small Omayyad castle, suggested at first by historical and epigraphical data, seems to be confirmed by architectural concordances and also by archaeological records. In fact, during 2002 survey, mostly Roman and Byzantine pottery have been collected on the site, together with common ware dating to 6th-8th century A.D.³⁵³

Furthermore, considering the geographical importance of the site, even an earlier Roman occupation of the site may be hypothesised. This can be confirmed by the discovery of an inscription referring to a *Cohors VI Hispanorum*:³⁵⁴

³⁴⁶ Mainly for architectural reasons: round angle towers are not known in Roman forts. Bauzou 1989a, 315-317; 1993, 42.

³⁴⁷ Genequand 2003a, 53-54; Genequand 2004b, 23.

³⁴⁸ For a discussion of the history of the site related to the so-called *Strata Diocletiana* see chap. 5.4.3

³⁴⁹ L. 9: Poidebard 1934, 47.

³⁵⁰ L. 24: Gregory 1995-1997: 1996, 208.

³⁵¹ Bauzou 1993, 43.

³⁵² Genequand 2003a, 54; 2004b, 24.

³⁵³ Also six coins have been found: the oldest is an Hellenistic bronze while the most recent dates back to the second half of the 4th century A.D. (reign of Constantius II). Genequand 2003a, 54.

³⁵⁴ Seyrig 1933a, 166, Fig. 2 = *AE* 1933, 215 = *Inv.* VIII, 206 = As'ad, Deplace 2002, nr. 23. Seyrig, the publisher, at first, read *cohors II Hispanorum* and signaled as provenance al-Bazzurye (12 km southwest of Palmyra), but amending it after (Seyrig, *Antiquités Syriennes*, t.II, 1938, 84, Additions et corrections à la première série: «Un décapage de l'inscription n. 9 a révélé qu'il faut lire, à la ligne 3: *coh. VI Hisp.* au lieu de *II. Hisp.* En outre, la stèle ne provient pas de Bazzurye, comme j'avais cru comprendre, mais de Bassiri, près du col qui domine le barrage de

C(aius) Laberius Fro=
nto mil(es) coh(ortis)/
VI Hisp(anorum) (centuriae)Nymph=
idi Heli filio
suo h(oc) c(ondidit) s(epulerum).

Other attestation of the *cohors VI Hispanorum* has been recorded as seen above but unfortunately no other inscriptions bearing the name of *Laberius Fronto*. This epitaph has been then cited as evidence for a pre-Diocletian military unit's presence at al-Basiri.³⁵⁵ The inscription, undated, is almost surely from the 2nd century A.D., since after that time the *praenomen* usually disappears but, as pointed out already by Van Berchem, an epitaph is not itself enough to prove the existence of a garrison.³⁵⁶ In fact, considering all other epigraphical evidences for the *cohors VI hispanorum*, it is pretty certain that, at least between Antonius Pius (A.D. 138-161) and Caracalla (A.D. 198-207), this garrison was stationed in Arabia. Therefore, this inscription could attest that the tomb was erected simply where *Laberius Fronto's* son died (not where the father was actually garrisoned), perhaps during a temporary movement of his unit.³⁵⁷

To conclude, a further evidence to support the idea of an early occupation of the site can come from literary sources if it is correct the identification of the toponym *Auira* with *Aureia* stated in the 2nd century A.D. Ptolemy's *Geography* (5, 15, 24) among the settlements in the Palmyrena, as suggested by Bauzou.³⁵⁸

Harbaka, entre Kasr al-Heir (de Kariatein) et Sababiar». From the pictures available (Seyrig 1933, Fig. 2 and As'ad, Deplace 2002, Fig. 11) is actually pretty clear that the reading must be VI instead of II.

For further implication of this inscription on dating the *Strata Diocletiana's* forts and their role see the introduction above and chapter 5.

³⁵⁵ Van Berchem 1952, 13; Speidel 1977, 709 («The tombstone from which its presence there is deduced seems to be as early as the turn of the first century»); Lewin 2002, 95 and De Ruggiero 1982, 1351 (who, however, reports Bazzurye instead of Basiri). Seyrig 1933a, 166 and Yon 2008, 140 do not give a date. Gregory 1995-1997: 1995, 84 who strongly critiqued Van Berchem's idea based on his misunderstanding of the inscription's provenance, seemed strangely not to consider the *errata corrige* of 1938. Spaul (2000, 131) still presented the reading as *Cohors II Hispanorum* coming from Bazzurye and dated it to the 3th century A.D..

³⁵⁶ Van Berchem 1952, 6-7: «les inscriptions ne nous apportent pas le secours qu'on aurait pu attendre... quel part tirer, par exemple, d'une épitaphe? Le soldat, dont elle nous apprend le nom et l'incorporation, tenait-il garnison, avec son corps de troupe, au lieu de la trouvaillie? Y était-il de passage, au hasard d'une expédition, ou pour des raisons personnelles? De tels documents son utiles lorsqu'ils ajoutent leur indice aux autres éléments d'une démonstration; isolément, ils ne signifient presque rien».

³⁵⁷ For other evidences of soldiers transiting through the region see Yon 2008, 136-141.

³⁵⁸ Traditionally identified with modern Hawwarin. See discussion in Bauzou 1993, 43.

Khan Aneybeh (SITE NR.16 – Gazetteer 1.a-b.)

ANCIENT NAME OF THE SITE:³⁵⁹

Epigraphically attested: *Nab*³⁶⁰

Literary attested: *Oneuatha* (*ND Or.* 32.41)³⁶¹

MODERN NAME OF THE SITE: Khan Aneybeh,³⁶² ‘Onébi³⁶³, ‘Oneybé,³⁶⁴ El-Annaybah³⁶⁵

LOCATION: 34° 0'49.11"N-37°18'45.98"E = 34.013642N 37.312772E (around 110 km southwest of Palmyra)

ERA: Late (?) Roman

SURVEYS: A. Musil 1908; M. Dunand 1929; A. Poidebard 1930; T. Bauzou late 1980s

REMAINS: fort

IMAGES: from the Palmyrena Project website of the University of Bergen:

<http://www.hist.uib.no/antikk/Dias/Syria/Anibeyeh/index.htm>; Google Earth; Poidebard 1934, Pl. XXVI

PLAN: Musil 1928, Figg. 26-27; Poidebard 1934, Pl. XXVIII

REFERENCES: Bauzou 1989a, 314, Pl. 58; Bauzou 1993, 40-41; Dunand 1931, 240, 427-428; Gregory 1995-1997: 1996, 211-212, 1997, E8.1; Kennedy 1990, 205, Figg. 155-156; Lander 1984, 201; Lenoir 2011, 90-91, Figg. 43-44; Musil 1928, 104-107, Figg. 26-27; Poidebard 1934, 46-47, 54, Pl. XXVII-XXVIII

COMMENT: Khan Aneybeh is located at the highest point along the so-called *Strata Diocletiana*, guarding one of the southern passes through the Jebel Rawaq.

The fort is a rectangle of 48.60 m x 39 m, covering an area of 0.18 ha, orientated approximately N-E/S-W. It displays square (9 m per side) projecting (6.5 m) corner towers. They are accessible through a gate in axis with the rampart's diagonal and are equipped with four loopholes in the

³⁵⁹ For a summary see Gazetteer 1.a.

³⁶⁰ *Nab* is an Arabic word meaning “the height, the hill”. This is not surprising given the site’s environment and its dominant position on a hill, with an extensive view over the southern depression. The comparison with *Nab*, the height, seems to fit well than with *an-naba*, i.e. “the source”. In fact, there is nowadays no source on the site and the presence of ancient *birkets* suggested that even once there was none. Bauzou 1993, 40.

³⁶¹ *Oneuatha* has been seen as corruption or approximate pronunciation of the name **Anabatha* (Kennedy, Riley 1990, 205; Van Berchem 1952, 13), which would correspond better to what scholars read at first on the milestones. However, it is the transcription of an Arabic diminutive that corresponds to its modern nome. Bauzou 1993, 40-41; Dunand 1931, 426.

³⁶² According to Bauzou 1993, 41 the passage from the ancient to the *Notitia*'s toponym (and then survived in the modern one) happened around the 4th century A.D.

³⁶³ Moritz 1889, 15.

³⁶⁴ Von Oppenheim 1889-1900.

³⁶⁵ Burton 1872, 364.

middle of each side.³⁶⁶ The fortification walls, composed by two facings of small regular masonry with mortared rubble core (Type 3), are 2.60 m large apart for the southern side, 3 m larger. The corner towers are reinforced with masonry regular blocks. The wall-walk, accessible by two stairs located symmetrically on each side of the angle tower's entrance, is still conserved. The fort is accessible through only one entrance, 2.20 m large that divides in two equal parts the western side. Poidebard's plan, taking over Musil's one, displays two extended buildings in the centre of the courtyard that could no longer be seen by Bauzou in 1989.³⁶⁷ A square watchtower with pyramidal base (around 12 m per side) is located nearby, c. 200 m northward.³⁶⁸

Scholars agree to identify Khan Aneybeh with *Oneuatha* seat of the *Cohors quinta pacata Alamannorum*.³⁶⁹ However, there is no available data that could provide a date for the fort's construction.

Khan al-Manquora (SITE NR.17 – Gazetteer 1.a-b.)

ANCIENT NAME OF THE SITE:³⁷⁰

Epigraphically attested: *Vallis Alba*³⁷¹

Literary attested: *Valle Alba* (*ND Or.* 32.42)

MODERN NAME OF THE SITE: Khan al-Manquora,³⁷² El-Maksúrah³⁷³

LOCATION: 33°54'58.26"N-37°14'50.95"E = 33.916183N 37.247486E (around 120 km southwest of Palmyra)

ERA: Late (?) Roman³⁷⁴

SURVEYS: R. Burton 1870-1871; A. Musil 1908; M. Dunand 1929; A. Poidebard 1930; M. Lenoir and T. Bauzou 1990³⁷⁵

REMAINS: fort

³⁶⁶ Gregory 1995-1997: 1996, 212; Lenoir 2011, 90.

³⁶⁷ Bauzou 1989a, 314; Kennedy, Riley 1990, 205.

³⁶⁸ Bauzou 1989a, 314; Gregory 1995-1997: 1996, 212; Lenoir 2011, 90; Poidebard 1934, 47;

³⁶⁹ *ND Or.* 32.41. For Bauzou 1993, 41 n. 27, «Il doit y avoir ici une erreur, pour *pacat(orum) Alamannorum*, désignant des Alamans qui auraient fait leur soumission à Rome, par opposition à d'autres qui demeureraient hostiles». Cfr. above.

³⁷⁰ For a summary see Gazetteer 1.a.

³⁷¹ Bauzou (1993, 40, n. 25) hypothesized that *Val (lis) Alba* should be considered as an equivalent of the Arabic **Wadi el-Abiyad*: the “white wadi”. The whiteness in question is that of marly limestone emerging in the area, which is noticeable from afar, therefore orienting a person towards the fort. The fort itself, at the time of its construction, was of bright whiteness, as evidenced by its recent breakings now glazed.

³⁷² In Arabic means “caravanserai of the quarry, the excavation” perhaps referring to the channel that carried water from the wadi to the cisterns on the site (Bauzou 1993, 38).

³⁷³ Burton 1972, 363-364.

³⁷⁴ There seem to be no post-roman structures apart for temporary Bedouin shepherds presence on the site: remains of corrals for sheep and goats (Kennedy, Riley 1990, 181).

³⁷⁵ Bauzou visited already the site in the late 1980s but without making a systematic survey.

IMAGES: from the Palmyrena Project website of the University of Bergen:

<http://www.hist.uib.no/antikk/Dias/Syria/Al-manquora/index.htm>; Bauzou 1989a, Pl. 53, 56-57; Google Earth; Lenoir 2011, Figg. 46-47; Poidebard 1934, Pl. XX.1-2, XXII.1-4, XXIII, XXV.1-4
PLAN: Musil 1928, Figg. 3-4; Poidebard 1934, Pl. XXI, XXIV

REFERENCES: Bauzou 1989a, 301-313, Pl. 53-57; Bauzou 1993, 38-40, Burton 1872, 363-364; Calvet, Geyer 1992, 94-100; Dunand 1931, 236-240; Gregory 1995-1995: 1996, 213-214, 1997, E9.1; Kennedy, Riley 1990, 181-183, Figg. 128-129; Lander 1984, 226; Lenoir 2011, 92-93, Figg. 45-47; Moritz 1889, 14-15 n. 2; Musil 1928, 31-33, Figg. 3-4; Poidebard 1934, 45-46, 52, 182-184, Pl. XX-XXV

COMMENT: The site, quite well preserved, is located along the so-called *Strata Diocletiana*, controlling one of the southern passes through the Jebel Rawaq that leads to al-Qaryatayn and *Emesa*.

The fort has square dimension of 90 m per side, covering an area of 0.81 ha. The sides, equipped with gates, are orientated N/-N-E and S/S-E. It displays small fan-shaped corner towers (that could be included in a 10 m per side square) projecting for 8 m on the wall and intermediate U-shaped towers, as observed at al-Bahkra.³⁷⁶ The latter, located only in the northern and southern side (where there are no entrances), are 7.8 m large, projecting c. 9 m on the wall and they accommodated a square room (5 m per side). Only the northern tower and the southeast intermediate one allows to detect the existence of a square room (6 x 6 m) accessible through a gate and probably equipped with loopholes. The distance between the angle and the intermediate towers is c. 39 m, while only 29 m on the other two sides (east and west), where the gates are located. These are c. 2.15 m large and surrounded by two U-shaped towers large 7.80 m, projecting outside for 8 m. For the piers of the door, that were probably supporting an arch, large cut stone blocks have been used.³⁷⁷ The rampart, large 2.20-2.50 m, is still very well preserved in height (2-7 m). It is composed of two facings of medium regular masonry³⁷⁸ with mortared rubble core (Type 3). Poidebard did not report any stair to access the wall-walk which is visible in Lenoir's photo in the southeast angle.³⁷⁹ No internal structures have been recorded apart for remains of Bedouin sheepfolds that may have covered the actual ancient traces, as survey by

³⁷⁶ See below.

³⁷⁷ Bauzou 1989a, 303; Gregory 1995-1997: 1996, 211-212; Lenoir 2011, 92; 302-302; Poidebard 1934, 45-47.

³⁷⁸ Blocks 12-20 cm square on face, but extending as much as 60 cm into wall.

³⁷⁹ They are composed by four steps 0.30 m high and 0.70 m long (Lenoir 2011, Fig. 46). He also pointed out that the wall masonry preserved suggest the existence of two other stairs, west of the two intermediate towers on the south and north sides.

Lenoir and Bauzou (1990) in the southeast part of the fort.³⁸⁰ There, already in the 1980s, Bauzou surveyed a small wall running parallel to the east side of the rampart. Poidebard's aerial photographs show more clearly the existence, inside the fort, of a square micro relief with same orientation of this wall but off-centre (N-E) for around 30 m. The angles appear to be marked with more micro reliefs. The whole structure is more similar to those of the other forts of the so-called *Strata Diocletiana*. Therefore, Bauzou cautiously suggests the possibility of two developments of the fort at Khan al-Manquora.³⁸¹

The fort lies at the centre of an elaborate system of water collection.³⁸² There are several watchtowers in the vicinity of the dam that let Khan al-Manquora to optically communicate with Khan Aneybeh.³⁸³ North of the settlement Poidebard noted, "little houses for soldiers" or *canabae*.³⁸⁴ Bauzou, in his first visit of the site, signalled unclear square structures at the foot of the hill, west of the site, that could be leveled traces of a permanent settlement.³⁸⁵

Scholars agree on identifying Khan al-Manquora as *Vallis Alba* seat of the *Cohors prima Iulia lectorum*.³⁸⁶

The pottery samples collected during Lenoir-Bauzou's survey (1990) are not significant.³⁸⁷ As the scholars themselves pointed out, two sherds of *sigillata* Clear D providing a *terminum post quem* around A.D. 300, as well as one sherd of African common ware, dating to the 2nd century A.D., do not lead to a conclusion neither to an early occupation of the site or to the fort's construction in Constantine time.³⁸⁸ However, the site seems to be not occupied in Islamic time but only in modern times by Bedouins communities.³⁸⁹

Al-Hamra (SITE NR.20)

ANCIENT NAME OF THE SITE: unknown

MODERN NAME OF THE SITE: al-Hamra

LOCATION: no exact coordinates available. Around 145 km southwest of Palmyra

ERA: Roman?

³⁸⁰ Preliminary by Bauzou 1989a, 303-304 and then Lenoir 2011, 93.

³⁸¹ Bauzou 1989a, 304.

³⁸² For an analysis of the water catching system of the site see chap. 4.3.2.

³⁸³ Poidebard 1934, 45; Kennedy, Riley 1990, 182.

³⁸⁴ Literally: "the booths" the settlement which grew up outside any military installation, usually along the approach road. Poidebard 1934, 183-184, but not visible on the aerial photos of the site.

³⁸⁵ Bauzou 1989a, 308; Lenoir 2011, 92.

³⁸⁶ *ND Or.* 32.42. For a discussion on the unit size and the fort size see the general introduction to the chapter.

³⁸⁷ For the complete list of samples see Lenoir 2011, 93.

³⁸⁸ The latter has been suggested already by Bauzou 1989a, 362, associating the fort to milestones found nearby (see chapter 5). However, even if functionally connected, milestone could have been erected independently from the construction or re-construction of the fort.

³⁸⁹ Bauzou 1989a, 313.

SURVEYS: none

REMAINS: watchtower

IMAGES: Google Earth?

PLAN: none available

REFERENCES: Burton 1872, 364; Musil 1928, 105-109; Dunand 1931, 419; Poidebard 1934, 45; Bauzou 1989a, 272.

COMMENT: Between Khan al-Manquora and Khan al-Trab, Poidebard signals the watchtower of al-Hamra. It is a small square (6.50 m per side) building made of strong blocks.

Khan al-Trab (SITE NR.18 – Gazetteer 1.a-b.)

ANCIENT NAME OF THE SITE:³⁹⁰

Epigraphically attested: *Vallis Diocletiana*³⁹¹

Literary attested: *Vallis Diocletiana* (*ND Or.* 32.43)

MODERN NAME OF THE SITE: Khan al-Trab

LOCATION: 33°44'57.56"N 37° 2'33.06"E = 33.749322N 37.042517E (around 160 km southwest of Palmyra)

ERA: Late (?) Roman

SURVEYS: A. Musil 1908; A. Poidebard 1930; T. Bauzou late 1980s

REMAINS: fort

IMAGES: Google Earth

PLAN: Musil 1928, Fig. 28; Poidebard 1934, Pl. XIX

REFERENCES: Bauzou 1989a, 299-300; Bauzou 1993, 37-38; Dunand 1931, 419; Gregory 1995-1997: 1996, 215-216, 1997, E10.1; Lander 1984, 188, 201; Lenoir 2011, 95, Fig. 49; Musil 1928, 108-109, Fig. 28; Poidebard 1934, 44-45, Pl. XIX; Van Berchem 1952, 13

COMMENT: The site is located almost at the end of the route leading to Damascus and it guards the southern pass of a transversal route leading to Khan Gneyel.

³⁹⁰ For a summary see Gazetteer 1.a.

³⁹¹ As stated by Bauzou 1993, 38: it is difficult to find an explication for the name "valley". The fort is actually located north of a depression that separates the Jebel Rawaq from the Safa's volcanic depression but it's difficult to say if this is the association. Moreover, *ual(lis)* can be interpreted as a Latin equivalent of the Arabic *wadi* but in this case is a very small *wadi* (Wadi Khan al-Trab). D. Van Berchem (1952, 13) found in the name "the memory of the work and perhaps a stay of the great emperor Constantine".

The building is a square enclosure of 43 m per side, covering a surface of 0.18 ha, with side orientated along the cardinal axis. It displays square (9.10 m per side) corner towers entirely projecting on the walls (7.50-8.30 m). They accommodate a square room (4 x 4 m) accessible through a hall and probably they were equipped with loopholes. According to Poidebard, the rampart was 3 m large, composed of two facings of small regular masonry with mortared rubble core (Type 3) but Bauzou's quick review of the ruins shows that only the bases of the walls and doorframes were of stone, the rest was made of mud brick (Type 5).³⁹² This also, led to a possible explanation for its modern name: "the caravanserai of earth".³⁹³ The existence of the wall-walk is attested by a staircase located west of the entrance. It can be supposed there was a double staircase on the opposite side of the gate, as displayed at Khan al-Hallabat and Khan Aneybeh.³⁹⁴ The only gate, 2.5 m large, is located in the middle of the northern side and it is supported by two pillars that, as well as the corner towers, were reinforced with middle size stone blocks. According to Musil,³⁹⁵ the courtyard was divided in many structures of different dimensions but Bauzou in late 1980s could only state «restes confus de structures internes».³⁹⁶

Scholars agree on identifying Khan al-Trab with *Vallis Diocletiana* seat of the *Cohors secunda Aegyptiorum*.³⁹⁷

Khan Abou Shammat (SITE NR.19 – Gazetteer 1.a-b.)

ANCIENT NAME OF THE SITE:

Epigraphically attested: unknown

Literary attested: *Thama* (?) (*ND Or.* 32.44)

MODERN NAME OF THE SITE: Khan Abou Shammat

LOCATION: 33°39'30.78"N 36°53'22.42"E= 33.65855N 36.889561E (around 210 km southwest of Palmyra)

ERA: Late (?) Roman

SURVEYS: A. Musil 1908; A. Poidebard 1930

REMAINS: fort

IMAGES: Google Earth; Poidebard 1934, Pl. XV.1-4

PLAN: Musil 1928, Fig. 1; Poidebard 1934, Pl. XVI

³⁹² Poidebard 1934, 44-45; Bauzou 1989a, 299.

³⁹³ Bauzou 1993, 37.

³⁹⁴ Lenoir 2011, 95.

³⁹⁵ Musil 1928, 108.

³⁹⁶ Bauzou 1989a, 299.

³⁹⁷ *ND Or.* 32.43. Bauzou 1989a, 300; 1993, 37; Dunand 1931, 239, Gregory 1995-1997: 1996, 215; Lenoir 2011, 95; Van Berchem 1952, 13 n. 5.

REFERENCES: Bauzou 1989a, 296-298; Bauzou 1993, 36-37; Burton 1872, 364; Gregory 1995-1997: 1996, 217-219, 1997, E11.1-2; Lander 1984, 201; Lenoir 2011, 96, Fig. 50; Musil 1928, 8, 109-110, Figg. 1-2; Poidebard 1934, 43-44, 50, 54, Pl. XV-XVI

COMMENT: Since Antiquity, the site has been an important crossroad linking the desert area south of it with the northern coastal Syria, i.e. it connected the so-called *Strata Diocletiana* (direction S-W/N-E) and a route oriented S-E/N-W.

Bauzou could not visit the site in late 1980s since it is nowadays a military site.³⁹⁸ Therefore, the only descriptions available are those of Musil and Poidebard. The fort is a square (50 m per side) building covering a surface of 0.25 ha, orientated N/N-W and S/-S-East, with square (9 x 9 m) projecting (6 m) corner towers. These seem to accommodate a room but neither Musil nor Poidebard signal an access. The rampart, 3 m large, is of Type 3: two facings of small regular masonry with mortared rubble core. Apparently, there are stairs near the entrance, which is located in the east side and it is 4 m large (3 m + 1 m extra due to two square pillars), leading to the wall-walk.³⁹⁹ Musil, followed by Poidebard who reproduced his plan, recorded remains of many internal buildings against the wall and more in the central courtyard but no aerial photo confirming this have been published.⁴⁰⁰

Moreover, the entire site appears to be complex with many buildings around the fort:

- in the south there are square buildings, surrounding a central tower and a watchtower;
- in the north-west there are a «poste d'observation» and an indiscernible structure;
- in the south-west there is a hexagonal tower equipped with six semi-circular appendices.⁴⁰¹

Unfortunately due to the circumstances, no certain data has been provided in order to reconstruct the chronology of these structures.

Initially identified as *Valle Diocletiana* of the *Notitia Dignitatum Orientis*,⁴⁰² it may be associated with *Thama* seat of the *Cohors prima Orientalis*, on the basis of a phonetic similarity of the two names and since it is mentioned on the *Notitia* just after *Oneuatha* (Khan Aneybeh), *Valle Alba*

³⁹⁸ Bauzou 1989a, 296 and Lenoir 2011, 96.

³⁹⁹ Gregory 1995-1997; 1996, 218.

⁴⁰⁰ No modern surveys have been carried out as stated above.

⁴⁰¹ Poidebard 1934, 43-44.

⁴⁰² *ND Or.* 32.43. However the milestones have located the toponym at Khan al-Trab. Mouterde 1930-1931, 230; Poidebard 1934, 44: «à moins que *Valle Diocletiana* ne doive être situé à Hirbet Beutmiyat».

(Khan al-Manquora) and *Valle Diocletiana* (Khan al-Trab).⁴⁰³ If this was the case then the list of the *Notitia* has followed a geographical order.⁴⁰⁴

3.4.2.3. South

Al-Bakhra (SITE NR.8 – Gazetteer 1.a-b.)

ANCIENT NAME OF THE SITE:⁴⁰⁵

Epigraphically attested: *Auatha*

Literary attested: *Auatha* (*ND Or.* 32. 22); Islamic sources: al-Tabari and al-Bekri (Musil 1928, 286-287, 290-296)

MODERN NAME OF THE SITE: al-Bakhra,⁴⁰⁶ al-Bkhara, *al-Bukhayra, Bīr al-Bḥara?,⁴⁰⁷ Buharra⁴⁰⁸

LOCATION: 34°21'58.89"N 38°14'39.32"E = 34.366358N 38.244256 (around 22 km south of Palmyra)

ERA: Late (?) Roman and Omayyad

EXCAVATIONS/SURVEYS: A. Musil 1908 and 1912;⁴⁰⁹ T. Wiegand 1917; A. Poidebard 1925 and 1932; T. Bauzou late 1980s;⁴¹⁰ M. Lenoir and T. Bauzou 1990; F. Colosi, L. Pompeo, D. Sangiorgio and C. Zamboni 1995, D. Genequand 2002⁴¹¹

REMAINS: fort

IMAGES: from the Palmyrena Project website of the University of Bergen:

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraS/Bakhra/index.htm>; Bauzou 1989a, Pl. 72-73, Pl. 76 (of the fort northeast of Bakhra); CORONA image 1105-1099Fore (Nov 4, 1968); Genequand 2003a, Figg. 4-9; Genequand 2004a, Figg. 3, 5-11, 13-14; Genequand 2004b, Figg. 9-10; Gertrude Bell Archive, Album Y_471-482; Lenoir 2011, Fig. 33; Musil 1928; Fig. 39 (capital)
PLAN: Bauzou 1989a, Pl. 71, 74; Pl. 75 (of the fort northeast of al-Bakhra); Genequand 2003a, Figg. 2-3; Genequand 2004a, Figg. 1-2 (Tetrarchic fort + Omayyad extension), 4, 12 (Mosque +

⁴⁰³ *ND Or.* 32.44. Bauzou 1989a, 267, nr. 1; 1993, 36-37; Dunand 1931, 235, Gregory 1995-1997: 1996, 217; Lenoir 2011, 96.

⁴⁰⁴ Dunand 1931, 235; Bauzou 1989a, 298.

⁴⁰⁵ For a summary see Gazetteer 1.a.

⁴⁰⁶ Jabbur 1995, 60 n. 18 (professor in Arabic literature and Semitic studies at the American University in Beirut native from al-Qaryatayn): «Most of the European explorers misspell the name of this ancient town. This is because they displace it from the dialect of the Bedouins, who pronounce no vowel after *bā'* and *a* after *khā'*. Some of the explorers even go to the extreme of writing it as “Bukhārā”, the name of the famous Islamic city in Central Asia.»

⁴⁰⁷ Lehmann 2002, 73.

⁴⁰⁸ Wiegand 1932, 13.

⁴⁰⁹ Total time at the site between two to three hours.

⁴¹⁰ The first visits were carried out in Spring 1988, see Bauzou 1989a, 333 n. 1.

⁴¹¹ Six days of campaign. Survey plus small-scale excavation (Genequand 2004a, 225).

church); Genequand 2004b, Figg. 7-8, 11; Lenoir 2011; Fig. 32; Musil 1928, Fig. 38; Wiegand 1932, Abb.18

REFERENCES: Bauzou 1989a, 333-346, Pl. 71-76; Bauzou 1993, 46-49; Bounni, As'ad 1989, 128; Colosi *et alii* 1996, 55-60; Dunand 1931, 227; Genequand 2003a, 33-38, Figg. 2-9; Genequand 2004a, Figg.1-14; Genequand 2004b, 13- 18, Figg. 7-11; Genequand 2006b; Gregory 1995-1997: 1996, 196-198, 1997, E2.1; Lehmann 2002, 73-74 (382.269), Tav. 20 nr. 21; Lenoir 2011, 81-82, Figg. 32-33; Musil 1928, 88, 90, 141-143, 234, 286-287, 290-296, Figg. 38-39; Poidebard 1934, 52, 59, 66-67; Wiegand 1932, 13, Fig. 18

COMMENT: The site is located around 22 km south of Palmyra and S-W of the Sebkhath al-Mouh, along a “secondary” branch of the so-called *Strata Diocletiana*,⁴¹² whose milestones reveal its ancient name: *Auatha*.⁴¹³ It was also a stop (depending on the season) along the southeastern route connecting Palmyra to the Euphrate at Hit.⁴¹⁴ Therefore, it represented a nodal point of the regional and infra-regional road network system as confirmed by Colosi, Pompeo, Sangiorgio and Zamboni's study.⁴¹⁵

Scholars agree on identifying it with *Auatha* of the *Notitia Dignitatum Orientis*, which lists a cavalry unit there around A.D. 400: the *equites promoti indigenae*.⁴¹⁶ We know that the same unit was already garrisoned there under the Tetrarchy, as confirmed by the discovery of a mutilate inscription from a stele, not *in situ*, found by Lenoir and Bauzou in the 1990s and dated to A.D. 293-305.⁴¹⁷

[...]O[...]l[...]lem

[.]li[---]

[D]iocl[etiani et

⁴¹² See chap. 5.4.3.

⁴¹³ The name is actually provided by milestones located at Khan al-Hallabat, the other *capita viae* along with al-Bakhra of this branch, see Bauzou 1989a, Annex 2, 401-403, nr. 91-93; 1993, 34-35, Fig. 5.

⁴¹⁴ Mouterde, Poidebard 1931; Poidebard 1934, 105-114 who considered it an intermediate fortified wall.

⁴¹⁵ Colosi *et alii* 1996, 58. Already suggested theoretically by Bauzou 1989a, 344.

⁴¹⁶ *ND Or.* 32. 22.

⁴¹⁷ Limestone rectangular block, crowned with projecting molding, 89 cm high (+ 26 cm of molding), 51 cm large, 37 cm deep, with letters 7 cm high. Bauzou 1989a, 336-337 = Bauzou 1993, 47, Fig.7 = *AE* 1993, 1607 = *CIL*, III, 6726 (?). See also Lenoir 2011, 82. It was located 20 m far from the eastern gate. Bauzou 1989a, 337 suggested that it came from the *principia* (and brought there «sans doute par des archéologues», 1993, 47), since it is related to a military context. Option denied by Lenoir. Genequand 2004a, 225 reported that the inscription is engraved on a stele currently reused as a pillar for and hypostyle building situated near the southern corner of the Roman fort. Is it the same inscription? He also continues saying that this Late Antique occupation is also documented by another Latin and two Greek inscriptions discovered during the recently undertaken work that will be published in a forthcoming article. Lewin 2004, 233 suggested that the inscription probably recalls the foundation of the fort by the unit of *equites promoti indigenae*. Perhaps the inscription was already seen during the 19th century if it is the same of *CIL*, III, 6726. Bauzou 1993, 47 n. 42.

M]aximiani Augg(ustorum)
et Constanti et
Maximiani nob=
ilissimorum Cae=
sarum[---]
[.] + *rgiti[---] p(prae)p(ositus) eq(uitum)*
promot(orum) [---]
ind(i)g[enarum?---]
ind(igenarum) [.] C
[---]

The remains consist on a fortified rectangular (52 m x 99 m) enclosure, covering a surface of 1.5 ha and orientated E-W with a main and single gate on the east side.⁴¹⁸ The latter, slightly oblique relative to the rampart is 3 m large and located between two vaulted piers. The gate is protected by U-shaped towers on each side, larger (8.75 m) than the intermediate ones that housed a rectangular room (7 m x 5 m) accessible from inside the fort through an entrance 1.25 m large. The four corners are equipped with small-fan towers that can be included in a square of 9-9.5 m per side and projecting 6.50 m (on average) on the wall. The internal room, reachable through a gate, is approximately square. The rampart, still preserved in some areas up to 3.70 m in height, is 3-3.10 m large and composed of two facings of medium irregular limestone masonry filled with raw blocks (Type 1).⁴¹⁹ There are 5 intermediate projecting (only toward the outside) U-shaped towers: two on each side that divide it on three equal parts and one on the small side, opposite to the gate. The average distance between two towers is 43.60 m along the three sides without gate, and 34-35 m in that with gate. The towers are 7 m large, projecting 8.5 m in the wall and accommodated a rectangular room (c. 5.50 m x 3 m) accessible internally by an entrance 1-1.25 m large.⁴²⁰

In a second stage, an addition has been made: another rectangular enclosure (25 m x 152 m) was added on the north side with rampart 2 m large and made of same limestone than the first stage

⁴¹⁸ There is no visible entrance to the second extension (see below), as stated by all surveyors. Genequand suggested two possible explanations: «either it was on the south-eastern side of the extension, which is badly preserved in its centre due to erosion, or there was an entrance somewhere through the Roman rampart which is common to both parts. If the latter was the case, which is more likely, a fairly low door covered by the sedimentary deposits may be supposed». In any case, the Roman fort gateway remained the main entrance also during the Omayyad period. Genequand 2004a, 234, 240.

⁴¹⁹ However, Bauzou 1989a, 340, after his first survey, stated that the rampart is the same type of that of the other *Strata Diocletiana*'s forts: Type 3.

⁴²⁰ Bauzou 1989a, 340-342; Genequand 2003a, 35; Genequand 2004a, 229-234; Genequand 2004b, 14-15; Gregory 1995-1997: 1996, 196-197; Lenoir 2011, 81;

one, but with smaller and thinner masonry blocks. The covered surface was then increased up to 1.8 ha. The northeast tower of the second enclosure has a circular plan (9.5 m of diameter) while the northwest one is square but it might belong to a third development of the fort. Along the northern side, two intermediate U-shaped towers projecting 5.80 m and 6.80 m, respectively, are located in the fortification wall.⁴²¹

The whole complex, at an indefinite moment, has been reconstructed: some damaged towers, rearranged with reused stone blocks, acquired a square plan, sustained by the original U-shaped tower bases. The rampart of the second enclosure was revised in some stretches.⁴²² Musil noted internal buildings on the west corner of the first enclosure, but they probably belong to the third development of the fort.⁴²³ Wiegand referred of stone dwellings in the interior,⁴²⁴ but Lenoir and Bauzou (1990) were not able to record any discernible structure, only single architectural blocks: masonry blocks, monolithic gates' frameworks, column' trunks and above all crafted Corinthian limestone capitals.⁴²⁵ The collected pottery spans from Late Roman to Islamic time.⁴²⁶ Outside the fort, the site extended for an area of *c.* 500 m of diameter apart for the southeast side, where no substantial remains have been discovered.⁴²⁷ An exhaustive description of these survives has been made by Bauzou,⁴²⁸ and then developed recently by Genequand.⁴²⁹ North and northwest of the fort, there are simple gardens, mainly, organized in rectangular enclosures of 20-30 m per side; located next to each other and closed by walls; following roughly the same alignment as the fort.⁴³⁰ Now, due to ground erosion, the bedrock is visible inside several of them but, where it is not, it does not seem to be buried under a significant amount of sediment. Genequand therefore suggested that these enclosures were not intended for cultivation but were probably for penning cattle. In any case they are difficult to date. They might correspond with the use of the Roman fort by a cavalry unit, which would have to pen numerous horses, or with a later and more agricultural settlement partly directed towards the breeding of cattle or horses. Any irrigation channel has been detected during the surveys, possibly because the water coming from the perennial source was

⁴²¹ Bauzou 1989a, 341; Genequand 2003a, 36; Genequand 2004a, 234-236; Genequand 2004b, 15-16.

⁴²² *Idem.* Confirmed also by Genequand 2003a, 36.

⁴²³ Musil 1928, Fig. 38; Bauzou 1989a, 341.

⁴²⁴ Wiegand 1932, 13.

⁴²⁵ Bauzou 1989a, 342; Bauzou 1993, 46; Lenoir 2011, 81. Already Musil 1928, 142 for the Corinthian columns heads in "Palmyrene style". By 2002 these capitals disappeared, the few left are in very bad conditions (Genequand 2003a, 35, n.11).

⁴²⁶ As in the houses area, see below. Bauzou 1989a, 342.

⁴²⁷ Genequand reports a total area of 40 ha (600 m E-W, 750 m N-S), fort included.

⁴²⁸ Bauzou 1989a, 333-336. Echoed by Genequand 2003a, 34-35.

⁴²⁹ Genequand 2003a, 37-38; Genequand 2004a, 238-239; Genequand 2004b, 17-18.

⁴³⁰ Genequand 2004a, 239. Instead Bauzou 1989a, 333-334: «they don't appear to have followed a precise construction scheme».

brought there running along the walls.⁴³¹ Northeast of the fort, houses, discernible mainly for their smaller size and for the gates constituted of piers and monolithic lintels and four funerary monuments, were located.⁴³² They usually consist of a rectangular structure comprising a courtyard and a series of rooms arranged on one, two or three sides of the courtyard. In this sector, the shreds are more abundant: ribbed fine pottery, red, brown or black, known from the Late Roman to the Omayyad period, and a yellow pottery, thicker and very common on the entire site, which may correspond to the most recent sedentary occupation.⁴³³ The number of the houses increases along with the distance from the fort, up to a small depression now containing a pond, beyond which there are no more visible remains apart for a Bedouin cemetery, plundered between two of Musil's visits.⁴³⁴ East and southeast of the fort, few remains are visible. The ground is very muddy in winter and rapidly leads to a flood depression in case of rain. Large architectural blocks (piers, sills, lintels, columns' barrels and stone doors, one decorated with a carved face) could come from a Roman funerary context, but none of them appear to be *in situ*.⁴³⁵ The ceramic collected on the surface is similar to that recovered in the houses' area.⁴³⁶ Much farther N-E and S-E two smaller units of buildings consisting of a few rooms and enclosures, as well as some smaller middens easily distinguishable as ashy deposits with a high concentration of surface shreds, have been detected.⁴³⁷

At present states, ancient sources do not provide any evidence for an occupation of the site prior to the end of the 3rd century, before the attestation of the epigraphical sources.⁴³⁸ al-Tabari's later reference (A.D. 838–923) that the site was first “constructed by the Persian” is quite surprising,⁴³⁹ but it has been demonstrated that this latter term can also have alternative meanings,⁴⁴⁰ and in this context would be better interpreted as “Roman”.⁴⁴¹ Nevertheless, in 1990's, Lenoir and Bauzou could not collect systematic pottery samples due to a sandstorm⁴⁴² but a lot of lithic industry, was found.⁴⁴³ This has been confirmed by the recent prospection of Genequand.⁴⁴⁴ It was probably

⁴³¹ Bauzou 1989a, 335. See also Genequand 2003a, 38 and Genequand 2004a, 239.

⁴³² Genequand 2003a, 35, 37.

⁴³³ *Idem*.

⁴³⁴ Between end of 1909 and 1912 (Musil 1928, 140, 286).

⁴³⁵ See Genequand results on this area below.

⁴³⁶ Bauzou 1989a, 336.

⁴³⁷ Bauzou 1989a, 338-339; Genequand 2003a, 35; Genequand 2004a, 228.

⁴³⁸ See above.

⁴³⁹ Musil 1928, 286-287: “built by the ‘*ajam*.”

⁴⁴⁰ For example cavarlyman, see Bauzou 1993, 48.

⁴⁴¹ Genequand 2004a, 226.

⁴⁴² Lenoir 2011, 81. Sandstorms are pretty common in that areas as reported by Mouterde too (Mouterde, Poidebard 1931, 102).

⁴⁴³ Lenoir 2011, 82. See also Genequand 2003a, 34.

⁴⁴⁴ Genequand 2003a, 34: «matériel lithique du Paléolithique inférieur et moyen, en particulier des bifaces de façonnage très soigné». See also Genequand 2004a, 226. For his survey results see below.

connected with the exploitation of the natural spring present in the site.⁴⁴⁵ In any case, the lack of classical sources does not exclude an early Roman presence on the site, especially during the apogee of Palmyra (2nd-beginning 3rd century A.D.) from which is not so far away.⁴⁴⁶

Hereinafter, al-Bakhra is instead, mentioned in the Arabic literary sources, notably by al-Tabari.⁴⁴⁷ His account relates how the Caliph al-Walid b. Yazid fled to al-Bakhra at the time of Yazid b. al-Walid's rebellion and how he was killed there on 15th April 744 A.D. Al-Bakhra was the castle (*qasr*) of Nu'man b. Bashir, a Companion of the Prophet and of the first Omayyad Caliphs, and it still belonged to his descendants. It is listed amongst several other fortified sites, including Tadmur/Palmyra and the very close site (1.6 km) of al-Sukkarye, where the Caliph may have chosen to flee the rebellion. As none of these sites corresponded to a place where al-Walid was keen to go, he finally decided for al-Bakhra. Al-Tabari gives two consecutive accounts of the events that happened after al-Walid left al-Aghdaf (identified with Qasr al-Tuba in Jordan), until he was killed in al-Bakhra by a force led by 'Abd al-'Aziz b. al-Hajjaj b. 'Abd al-Malik. While mainly concentrating on the events, al-Tabari's text nevertheless provides many details about the site. Its main feature was a well-fortified castle, equally called *qasr* or *hisn* in Arabic. A village (*qariya*) is also described, where al-Walid's troops were supposed to find fodder for their horses. The third component of the site was the place where al-Walid was staying at first, which is described as a *fustat* that is a tent or a camp.⁴⁴⁸ In both accounts, the Caliph, feeling that the danger was becoming greater, retreated to the castle as a last resort. According to the first account, al-Walid exchanged some words with the assailants from the top of the castle's entrance and, after having been insulted, went inside one of the rooms to read the Koran. The assailants then climbed the rampart and went into the room and decapitated al-Walid. The second account differs slightly and suggests that al-Walid left his tent or camp to go inside the castle. Surprisingly, the entrance to the castle was only barred by a chain which 'Abd al-'Aziz's troops easily forced, with only one man having to climb the castle wall. They killed al-Walid with their swords and then cut off his head.

The modern Arabic toponym of the site, al-Bakhra, according to al-Bekhri (11th A.D.) means "the stinking" or "bad smells". Musil suggested that it was related with the cemetery effluvium and with the sensitiveness of the Bedouins, who believe them to have an injurious effect on many

⁴⁴⁵ Bauzou 1989a, 333 and 342; Genequand 2004a, 226.

⁴⁴⁶ In agreement with Bauzou 1989a, 342.

⁴⁴⁷ Musil 1928, 286-287, 290-297 to whom also Bauzou 1989a, 344-346, Bauzou 1993, 46-48 and Genequand 2003a, 2004a refer.

⁴⁴⁸ To relate the literary account to the archaeological evidences see Genequand 2004a, 240.

people.⁴⁴⁹ However Bauzou believes that «Il est vrai que l'eau de Palmyrène est sulfureuse, et que le terrain à Bkhara contient une substance noire d'aspect peu engageant, mais son odeur n'a rien d'insupportable. On n'imagine pas d'ailleurs la construction d'une résidence princière Omayyade en un lieu affecté d'une telle nuisance».⁴⁵⁰

Between 2002 and 2003, as part of a Syrian-Swiss project studying the Omayyad settlements in the Syrian steppe, Genequand, has carried out at the site a systematic survey and small scale excavation in order to re-evaluate what is reported in the Islamic sources on the basis of the archaeological data and to establish a more precise chronology of the historical and architectural development of al-Bakhra between Late Antiquity and Early Islamic period.⁴⁵¹ He carried out a sounding inside the fort, against the rampart, between the gateway and the south-eastern tower that led him to recognize four main occupational layers: «the lowest one, at the same level of the foundations, preceded the construction of the fort and was dated to the 2nd or 3rd century A.D. The second layer corresponded to the fort's original occupation and was dated to the late Roman period. It was covered by a fill, on the top of which a rough paving had been laid. This paving formed the third occupation layer. This was followed by a very thick (1.50 to 1.80 m.) rubbish dump made of organic sediments and numerous sherds. These sherds were dated from the 4th to the 8th/early 9th centuries A.D. The last and most recent occupation layer was only 0.30 to 0.40 m. below the surface. It consisted of a rough, partially paved floor and a number of installations related to some kind of grinding activity. No material was found to provide a date for this layer, but it appears to be quite late (17th to 19th centuries?)».⁴⁵² In general inside the fort, while previous surveys' descriptions were more vaguer,⁴⁵³ Genequand noted that the structural remains, while largely covered by sedimentary deposits, were generally in a good state of preservation. In fact, several arches are still standing but emerge very little from the ground, as well as numerous doors, indicated by vertical monolithic posts, of which only the lintels are missing. However, only few walls are visible on the ground. The scholar suggested that a possible reason for this might be that they were mainly built in mud-brick or with small-sized blocks that decay more rapidly. It appears that rows of rooms were organized parallel to the rampart and were separated by narrow streets. In any case, without systematic excavation is impossible date to most of the structures visible inside the fort that appear to belong to different period, from the original construction to a late

⁴⁴⁹ Musil 1928, 296.

⁴⁵⁰ Bauzou 1989a, 345.

⁴⁵¹ The site of al-Bakhra was surveyed in June 2002 and soundings were made in July 2003. See Genequand 2003a, 33-38 (preliminary first year results), Genequand 2004a (general results of the whole survey); Genequand 2004b, 13-18; Genequand 2006b.

⁴⁵² Genequand 2004a, 229-231.

⁴⁵³ See above.

phase.⁴⁵⁴ From an architectural point of view, the original layout of the fort has a good parallel in the much larger legionary fortress of al-Lejjun in Jordan, which is dated to c. A.D. 300 and shows similar fan-shaped corner towers and intermediary U-shaped towers. Moreover, the fan-shaped corner tower is a feature common to most of the small forts built along the so-called *Strata Diocletiana*.⁴⁵⁵ While Bauzou noticed inside the second enclosure «des murs de pierre enfouis mais l'ensemble est trop bien enterré pour qu'on puisse reconnaître un plan quelconque»,⁴⁵⁶ Genequand remarked that the entire area was built-up with rooms, or groups of rooms organized along one or more N-S axes. Most the internal walls were probably built in mud-brick and only the vertical monolithic parts of the doors, the lintels, and the arches used for porticoes and supporting roofs (which remains are still standing) were built in stone. There was only one group of rooms, located in front of the southern intermediary tower that seems to have been built entirely of stone.⁴⁵⁷ Several architectural elements, as already proposed by Bauzou,⁴⁵⁸ suggest that the extension of al-Bakhra was of early Islamic date. This fact has been confirmed by Genequand through a sounding carried out against the rampart of the extension:⁴⁵⁹ «There is clearly only one phase of construction and a single floor abutting the enclosure wall. The floor is built in lime mortar over a pebble bed. This pebble bed only covers some thin layers of occupational debris overlying the natural limestone bedrock. Over the floor, the infill of the building consists of remains of molten mud-brick and wind-blown deposits. Very little material was found in the sounding, but it seems to indicate a short occupational sequence. A handful of shreds originating from the floor (pebble bed and mortar) and from the immediately underlying layer, provide a *terminus post quem* of at least the 6th century A.D. Of note amongst these shreds were several handles of Late Roman Amphora 1 (5th to 7th century A.D.) and several shreds of possible early Islamic date». Genequand dated the third stage (northwest rounded corner tower added in the second enclosure, rearranged rampart and towers, some U-shaped towers replaced by square ones) possibly to early Medieval time (5th to 7th century A.D.) in relation to the al-Bekhri's quote mentioned above.⁴⁶⁰

⁴⁵⁴ The very wide doorway situated near the center of the fort that faces, and is exactly in line with, the gateway seems to belong to the former period, and to represent the entrance to the *principia*. In contrast, a number of elements of porticoes built with reused materials (already stated by other surveyors) as well as an industrial sector comprising *in situ* oil-press uprights, seems to post-date the military use of the fort. Genequand 2003a, 35; Genequand 2004a, 231.

⁴⁵⁵ See below.

⁴⁵⁶ Bauzou 1989a, 342.

⁴⁵⁷ Genequand 2003a, 36; Genequand 2004a, 234.

⁴⁵⁸ He suggested that the enclosure's enlargement (second stage) and some internal buildings, as well as the gardens had to be related with the Omayyad residence but not all the houses (Bauzou 1989a, 344-346).

⁴⁵⁹ Halfway between the northern square tower and the first intermediary tower. The wall is preserved up to a height of 2.30 m and was probably built in mud-brick. Genequand 2004a, 236.

⁴⁶⁰ Genequand 2003a, 36; Genequand 2004a, 231.

Outside the fort, the archeologist has been able to identify the remains of two previous unknown buildings.⁴⁶¹ Immediately east of the southern tower of the Roman fort are the remains of a church (16.20 x 17.90 m externally), which follows the same orientation of the fort, roughly N-W to S-E. The identification of this structure as a church is based on its basilical plan with a central nave and two side-aisles.⁴⁶² Directly north of the church are the remains of a mosque.⁴⁶³ This structure consists of two rows of columns and pillars defining a hypostyle hall (c. 24 x 13.50 m internally) with five aisles and two, or possibly three, bays.⁴⁶⁴ All the pillars and columns supporting the roof of the prayer hall are reused elements dating back to the Roman period. The columns include two milestones brought from the vicinity.⁴⁶⁵ Another column bears a frame in relief, but without an inscription. The eastern pillar of the southern row is a stele bearing the Tetrarchic Latin military inscription already mentioned. At least two of the columns of the southern row supported Doric capitals, probably dating to the 1st century B.C. or the first century A.D. Due to the relative rarity of the Doric order in the Syrian provinces, it would be surprising if they originated from al-Bakhra itself and it may be more likely that they were brought from Palmyra like the other reused architectural elements.

Without systematic excavations is not possible to date both structure. It seems at least, that the church was abandoned before the construction of the mosque. Surface sherds collected systematically across different part of the site, in accordance with what noticed by Bauzou (see above), show an occupational sequence extending from the 2nd to the 9th century.⁴⁶⁶ To conclude, al-Bakhra settlement's development is interesting for many reasons: it is the first Roman fort to have been excavated along the so-called *Strata Diocletiana* and it represents one of the very few clear (and oldest) examples of Roman fort reused as Omayyad settlement.⁴⁶⁷

In 1995, al-Bakhra was incorporated into the project of the “Centro Ricerche Archeologiche e Scavi di Torino and of the Direction Général des Antiquités et des Musée de Sirie” for the realization of the archaeological map of Syria. On this occasion the area was studied through an analysis of satellite images accompanied by a surface reconnaissance which included an area of about 30 x 30 km, centered on the city of Palmyra. The aim was to establish a historical

⁴⁶¹ In 2003a, 37-38, the scholar was still beware on the interpretation.

⁴⁶² For a precise description of the building see Genequand 2004a, 236-237. For the plan see his Fig. 12.

⁴⁶³ The *qibla* wall corresponds to the northern wall of the church.

⁴⁶⁴ For a precise description of the building see Genequand 2004a, 237-238. For the plan see his Fig. 14.

⁴⁶⁵ Bauzou 1993, 47.

⁴⁶⁶ Genequand 2003a, 38; Genequand 2004a,

⁴⁶⁷ Another example is represented by Qasr al-Hallabat in Jordan. See Genequand 2006a, 12. Between the two period (5th to 7th A.D.) there might have been there a village community within the first enclosure that retained his defensive characteristic (Genequand 2004b, 15).

reconstruction of the human presence in the area.⁴⁶⁸ The research revealed that the site of al-Bakhra covers actually an area much larger than that known from the emerging structures and that many road traces are connected to it. This study has confirmed the importance of this site as a nodal point on the regional and super-regional road network.⁴⁶⁹

In 1908 and in 1912 Alois Musil observed around 2 km S-W of the settlement, but connected to it, the remains of another site (much smaller than al-Bakhra).⁴⁷⁰ Was it one of the remains mentioned above outside the fort or not? The question remains open.

A similar problem arises with the small and damage («presque invisible au sol») site 12.5 km northeast of al-Bakhra, mentioned by Bauzou and considered as *khan* or fortified well. The description is that of a square enclosure of 90 m per side with an entrance in the middle of the northern one. It is equipped with four corner towers, one tower in the middle each side, apart for the north one where two towers flanked the entrance. It is in very poor general condition but the scholar noted that its structure is different from Khan al-Manquora and al-Bakhra' forts. There are one circular well inside the fort and one south of it, both still in use. The surface pottery collected consists mainly of Late Roman/Byzantine examples.⁴⁷¹ It may coincide with site nr. 24 or with nr. 2 of Fig. 3.1. Unfortunately Bauzou's coordinates appear to be incorrect. The site was possibly connected with a winter path of a north stretch of the so-called *Strata Diocletiana*, bypassing the Sebkhah al Mouh.⁴⁷²

3.5. Late Roman rural sites⁴⁷³

Al-Bazzurye (SITE NR.9.1, 9.2, 9.3)

ANCIENT NAME OF THE SITE: unknown

MODERN NAME OF THE SITE: al-Bazzurye, al-Bazzurye 3 = Tlal al Muz

LOCATION: al-Bazzurye 1: 34°23'2.53" N 38°17'0.74"E = 34.384036N 38.283539E

al-Bazzurye 2: 34°23'7.41" N 38°17'13.39"E = 34.385392N 38.287053E

al-Bazzurye 3: 34°23'31.41" N 38°17'48.78"E = 34.392058N 38.296883E

(around 22 km south of Palmyra)

ERA: Late (?) Roman and Omayyad

⁴⁶⁸ Colosi *et alii* 1996.

⁴⁶⁹ Colosi *at alii* 1996, 58.

⁴⁷⁰ Musil 1928, 91, 143. He also observed on the top of the hillock of Tell al-Bakhra, a watchtower (1928, 88).

⁴⁷¹ Bauzou 1989a, 350-351, Pl. 75-76.

⁴⁷² See chapter 5.

⁴⁷³ For a systematic survey of the water resources and infrastructures available at al-Bazzurye and al-Sukkarye I refer to 4.3.3.

EXCAVATIONS/SURVEYS: A. Musil 1908 and 1912;⁴⁷⁴ T. Wiegand 1917; K. Al- As' ad 1976; D. Genequand 2002

REMAINS: three unspecified buildings

IMAGES: from the Palmyrena Project website of the University of Bergen:

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraS/Bazuriyeh/2/index.htm>,

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraS/Bazuriyeh/1/index.htm>,

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraS/Bazuriyeh/3/index.htm>;

Genequand 2003a, Figg. 17-20 (al-Bazzurye 1), Fig. 21 (al-Bazzurye 2), Figg. 22-23 (al-Bazzurye 3); Google Earth; Musil 1928, Figg. 35-36

PLAN: Genequand 2003a, Figg. 15-16; Musil 1928, Fig. 33 («East ruins»), Fig. 34 («West ruins»); Wiegand 1932, 11-12, Abb.15-17

REFERENCES: Bounni, As'ad 1989, 127-128, 131; Cantineau 1930, 548-549; Cussini 1995; Cussini 2005, 35-36; Dodge 1988, 217; Genequand 2003a, 40-43, Figg. 15-23; Lehmann 2002, 88 (386.271), Tav. 20 nr. 22; Musil 1928, 88-89, 137-140, Figg. 33-36; *PAT* 1791; Teixidor 1963, 35; Wiegand 1932, 11-12

COMMENT: The site is located around 22 km south of Palmyra and east of al-Bakhra and al-Sukkarye.

Unexpectedly,⁴⁷⁵ since Musil and Wiegand's visit at the beginning of the 20th century, it has not been surveyed until recently by Genequand,⁴⁷⁶ who recorded two complexes at al-Bazzurye itself (al-Bazzurye 1 and 2), and a third one (al-Bazzurye 3 - also known locally as the al-Tlal Muz) further east.⁴⁷⁷ All of them present a gatehouse overlooking a courtyard and once inside, on the left of the door, there is an open room. Al-Bazzurye 1 has a two-story tower whose eastern facade is decorated with several crosses. Among the architectural peculiarities of this tower, there is the barrel shingle supported by a transverse arch which is the same disposition found in a small and isolated building next to al-Bazzurye 2.⁴⁷⁸ Another peculiarity of al-Bazzurye 1 is the presence in the north wall of two small U-shaped tower-buttress. Musil noted two others on the western front,

⁴⁷⁴ During the second visit, in 1912, Musil spent on the site 2 hours and 10 minutes (Musil 1928, 137).

⁴⁷⁵ As noted also by Genequand 2003a, 40: «Il est étonnant que ces édifices assez bien conservés n'aient pas plus attiré l'attention des archéologues jusqu'à maintenant». In fact, neither Bauzou surveyed it in the 1980s, who however recorded al-Sukkarye.

⁴⁷⁶ Even if it was not an Omayyad site, because it appears to be strongly connected with al-Bakhra and even more with al-Sukkarye. As al-Bakhra (see above) it was surveyed as part of a Syrian-Swiss project studying the Omayyad settlements in the Syrian steppe. Genequand's team spent there 3 days. Genequand 2003a, 40-43.

⁴⁷⁷ His maps are quite different from Musil's ones that recorded only «Western and Eastern ruins» (al-Bazzurye 1 and 2).

⁴⁷⁸ This is the building where the lintel with the Palmyrene funerary inscriptions has been recovered (see below).

but none of them are still detectable today.⁴⁷⁹ These three buildings, together with those at al-Sukkarye, have specific architectural features common among rural settlements in Late Antiquity. It would therefore be interesting to properly excavate the site in order to define modalities of land occupation of the Palmyrene hinterland between Late Antique and Early Islamic period. In fact, this is the first time that it is possible to detect the existence of large farms that are not related to a rural occupation, but with their own architectural features. Their role in the genesis of some later Omayyad settlements also deserves to be investigated in more detail.⁴⁸⁰

The above-mentioned rural character of the site has been supposed also for earlier period. Some scholars suggested that the area was already exploited in classical time for agriculture, horses and camels breeding by Palmyrenes who were subsequently buried there.⁴⁸¹ This would be proved by the presence of a Palmyrene funerary inscription in a door lintel, dated to A.D.171: *PAT 1791*.⁴⁸² It relates that Šalmā, daughter of Bōlḥa, acting for her husband, sold half of the tomb in question and received from the buyer the sum of one hundred and twenty *denarii*.⁴⁸³

In the month of Iyyar, year A.D. 171, Šalmā, daughter of Bōlḥa, in the place of ‘Ogeilō, son of Bōrrefā, her husband- and Yaddai, son of Kīlai is the witness, acknowledges to Malkū, son of Moqīmō, that she received one hundred and twenty silver dinars from him, and for these, she gave him, and ceded half of the portion, one of the three parts of the burial hypogeum, which is, two as you go out from the doorway, to your left, open towards the east, in association with Malkū [...] and in association with ‘Ogeilō, her husband, and the part of the whole, three cubits wh[ich she ga]ve to Malkū and to [...]. (Translated by E. Cussini)

I believe that supposing an agricultural exploitation of the area by the tombstone owners, even if indirectly,⁴⁸⁴ would be going too far in interpreting the inscription, but, as proved by Cussini,⁴⁸⁵ the text itself still retains a great linguistic and historical importance. In fact, *PAT 1791* is the most articulated and complex of the extant Palmyrene “cession texts”.⁴⁸⁶ These funerary inscriptions

⁴⁷⁹ Musil 1928, 137.

⁴⁸⁰ Genequand 2003a, 43.

⁴⁸¹ Musil 1928, 88: «there is an abundance of water in the neighbourhood of al-Bakhra, with possibilities of cultivation that must have been made use in times long past, as numerous remains of gardens and country houses bear witness». During his visit in 1912, he also noted an ancient cemetery near the western building (1928, 138-140). Same idea in Bounni, As’ad 1989, 128; Teixidor 1963, 35; Teixidor 1984, 71.

⁴⁸² The text has been signaled to J. Cantineau during his visit to al-Bazzurye in January 1930 and firstly published by him in June 1930 (Cantineau 1930, 548-549).

⁴⁸³ The woman is said to act *bmqmw* “in place of” her husband, “Ogailu, son of Boropa”, who, for some reasons unknown to us, was unable to conduct the transaction.

⁴⁸⁴ Teixidor 1963, 35.

⁴⁸⁵ Cussini 1995, 233-238; Cussini 2005, 35-36.

⁴⁸⁶ “Cession texts” have been published and studied by Ingholt, Starecky, Teixidor, Gawlikowski and Bounni. For a complete bibliography see *PAT* 1-21. For Cussini (2005, 36 n. 37), the lengthier version of this inscription, when

record cession of the whole tomb, or, most commonly, of sections of it, like exedras (halls or arcades with niches), walls with row of niches, or group of niches. Other possibilities include cession of an unspecified portion referred to as *mnh* “part, portion” (as in the case of *PAT* 1791). Dated “concession texts” range between the 1st and the 3rd century A.D. They have been found in tombs of all attested types while some of them were re-employed in later architectural structures, outside funerary context.⁴⁸⁷ What makes *PAT* 1791 so unique, apart for being one among only twenty cession texts featuring women in the role of sellers or buyers of funerary properties,⁴⁸⁸ is the fact that it is the only one in the whole corpus that records the sale price, while the rest of the inscriptions give no indication of it and make no reference to the receipt of money. Moreover, it also preserves other phrases and key-clauses typical of the formulation of sale documents, in addition to the bare cession and “forever” formulas, proving to be closer to the original document of sale on perishable material now lost. In other words, these cession inscriptions were located in the tombs as “short copies” of the original documents, possibly to serve two purposes: they reiterated the title of the purchaser to the property (already expressed by contract on perishable material), and they responded to the need felt by the buyer to add an inscription containing an official statement (legitimizing his presence in the tomb as new owner, or better, co-owner) to flank the inscription of foundation, which contained the name of the builder and dedication of it to his family for eternity.⁴⁸⁹

In 1976 white marble quarries, that were probably the main supply source of this material for the city of Palmyra, have been discovered nearby al-Bazzurye.⁴⁹⁰ In fact, marble was found in the “Baths of Diocletian” (3th A.D.) and it was used both for sculptures and decorations. It does not appear to be of great quality and the crystals are often not of equal size. Sometimes black mica veins run through it. It tends to a warm honey color like the limestone in use at Palmyra.⁴⁹¹ Most likely, the extraction technique used involved the cutting of the material portion required with a metal saw. Inside the holes, that were created, wooden wedges were inserted and subsequently inflated with water. The blocks were detached with a hammer hitting the wooden wedges and then they were squared and transported to Palmyra to be processed. Some unfinished block samples

compared to the standard cession text is perhaps due to the geographical distance between al-Bazuriyye and the archives in Palmyra, where conceivably, a copy of the original, complete deeds of sale drafted on perishable material were deposited against possible litigations.

⁴⁸⁷ Cussini 1995, 236-237.

⁴⁸⁸ Therefore being one of the primary epigraphical sources for studying the role of women in the Palmyrene classical society.

⁴⁸⁹ Cussini 2005, 36.

⁴⁹⁰ Bounni, As’ad 1989, 127.

⁴⁹¹ Dodge 1988, 223.

were found in the quarries.⁴⁹² The quarries that, instead, supplied the city with hard limestone, the most common material used, were located around 15 km N-E of Palmyra and were in use between the 1st and 3rd century A.D. They have been the object of studies in the early 1990s as part of a joint mission among the Catholic University of Leuven, the German Archaeological Institute and the Department of Antiquities of Syria with the aim of creating a detailed cartographic map of the site, researching the extraction and transportation techniques, as well as studying the community who worked or lived there.⁴⁹³

Before concluding it must be noted that from Google Earth images, at least four structures, that may be ancient, can be recorded around al-Bazzurye and al-Sukkarye (Fig. 3.4).⁴⁹⁴



Fig. 3.4. Possible ancient structures related to al-Bazzurye and al-Sukkarye.
(Image produced from Google Earth)

Al-Sukkarye (SITE NR.10)

ANCIENT NAME OF THE SITE: unknown

MODERN NAME OF THE SITE: al-Sukkarye but until 20th century: *al-Hazîm⁴⁹⁵

⁴⁹² Bounni, As'ad 1989, 128. The same process was applied for the quarries found northwest of Palmyra (see below) as stated by Schmidt-Colinet 1995a, 53-55. Recent images of the quarries have been shot by the University of Bergen team: <http://www.hist.uib.no/antikk/dias/Palmyra/Stenbrud/index.htm>, <http://www.hist.uib.no/antikk/dias/Palmyra/StenbrudN/index.htm>.

⁴⁹³ Schmidt-Colinet 1995a.

⁴⁹⁴ Not visible on CORONA images. Coordinates: 34°22'43.94"N - 38°14'37.40"E; 34°23'37.23"N- 38°16'40.22"E; 34°23'18.54"N- 38°16'58.83"E; 34°23'19.30"N- 38°17'3.38"E; 34°23'21.76"N - 38°17'13.62"E.

LOCATION: 34°22'26.79"N 38°13'59.56"E = 34.374108N 38.233211E (around 20 km south of Palmyra)

ERA: Roman and Omayyad

EXCAVATIONS/SURVEYS: T. Wiegand 1917; K. Al- As'ad 1976; T. Bauzou late 1980s; D. Genequand 2002⁴⁹⁶

REMAINS: several structures

IMAGES: from the Palmyrena Project website of the University of Bergen:

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraS/Sukkari/index.htm>; CORONA image 1105-1099Fore (Nov 4, 1968); Genequand 2003a, Figg. 11-14; Gertrude Bell Archive, Album Y_483; Poidebard 1934, Pl. XLIII.1

PLAN: Genequand 2003a, Fig. 10; Wiegand 1932, Taf. 3-4

REFERENCES: Bauzou 1989a, 347-349; Bounni, As'ad 1989, 128- 131, Genequand 2003a, 38-40, Figg. 10-14; Wiegand 1932, 10-11, Taf. 3-4; Poidebard 1934, 55; Pl. XLIII.1

COMMENT: The site is very close to al-Bakhra, only 1.6 km northwest of it.

The ruins received different interpretations: Wiegand, who firstly drew up the plan, believed the site was a fortified post-Costantinian farm;⁴⁹⁷ Poidebard considered it a «colonie militaire romaine»,⁴⁹⁸ and, recently, Bauzou suggested that it was a medieval building leaning against a Late Antique tower, «extension probable du domain ummayyad de Bakhra».⁴⁹⁹ The latter opinion would have been confirmed by the fact that **al-Hazîm* (ancient Arabic name of the site until the beginning of the 20th century) is listed among the places in the hands of supporters of Walid b. Yazid during his escape in the Palmyrene.⁵⁰⁰

However, the systematic survey carried out in 2002 by Genequand, tends to demonstrate that the whole complex can be ascribed to Late Antiquity (pre-Omayyad), except for some later refurbishments.⁵⁰¹ To present the site I will follow Genequand's description since Bauzou is not so systematic (no drawn plans either) and relates different cardinal points for the structures. It is also

⁴⁹⁵ Genequand 2003a, 39.

⁴⁹⁶ Two days of work there. As al-Bakhra and al-Bazzurye, al-Sukkarye surveyed was part of the Syrian-Swiss project studying the Omayyad settlements in the Syrian steppe.

⁴⁹⁷ Wiegand 1932, 10-11.

⁴⁹⁸ Poidebard 1934, 55.

⁴⁹⁹ Bauzou 1989a, 349.

⁵⁰⁰ For this episode related by al-Tabari see al-Bakhra site's sheet.

⁵⁰¹ Some of them following Wiegand visit in 1917. Genequand 2003a, 39.

possible that the remains' situation may have changed since the 1980s, as happened after Wiegand's visit.⁵⁰²

South of the site there is a square three-floor tower made of big regular limestone blocks, dated to the 6th century A.D. (sculpted crosses).⁵⁰³ An almost square complex, delimited by a small wall enclosure leans against the tower. An imposing and well-preserved porch-tower, which includes in the masonry reused carved blocks of 1st-3rd century A.D.,⁵⁰⁴ represents the entrance of this building. There is a small room in the thickness of the masonry porch that let to communicate through a window, with someone standing on the outside of the front door. On the inside, against the eastern wall, there are series of rooms, where reused column trunks support arches on which lay the roofing. A vast network of enclosures develops N-W of this main building. Against the first of them and few meters north of the porch-tower, the walls of a second set of rooms are still distinguishable. At the end of it, a tomb similar to those found east of the al-Bakhra's gate, has been recovered.⁵⁰⁵ Farther north, there are the remains of six houses built of mud bricks with stone basement. The surface sherds collected, indicate an occupation from Late Antiquity until the Islamic era.⁵⁰⁶

As already stated above for al-Bazzurye, al-Sukkarye presents strongly architectural similarities (tower and porch-tower) that lead to interpret both sites as «une forme de villae dévolues à la mise en valeur du territoire de la Palmyre byzantine».⁵⁰⁷ This interpretation is, for some aspects, the same proposed by Wiegand, but delaying the date for its construction.⁵⁰⁸ The surface samples attest the survival of the site during the Omayyad Era but it is not possible to determine type and quality of this occupation. Nevertheless it is likely that the establishment was linked in one way or another to the nearby al-Bakhra.

⁵⁰² Already Bauzou 1989a, 347.

⁵⁰³ See Genequand 2003a, Fig. 14. A second rectangular (square at origin but with a enlargement) tower with same structure is attested by Bauzou 1898a, 347. Is it what Genquand refers to as «Une construction aussi massive que la tour, mais de seulement un étage sur rez, occupe ce qui devait être la cour, peu en avant de l'entrée».

⁵⁰⁴ Probably brought there from Palmyra.

⁵⁰⁵ Genequand 2003a, 40.

⁵⁰⁶ Bauzou 1989a, 348; Genequand 2003a, 40. However it is impossible to determine type and quality of the Islamic occupation, it is nevertheless likely that the establishment was linked in one way or another to the nearby al-Bakhra.

⁵⁰⁷ Genequand 2003a, 40.

⁵⁰⁸ Wiegand (1932, 11-12) placed it in the 2nd century A.D.

Chap. 4. Exploiting the available

4.1. Introduction

Palmyra's growth and prosperity as a community depended on its management of the human and material resources within its hinterland. As it can be inferred from archaeological and epigraphic evidences, at least for the first three centuries of common era, the city is likely to have been an important institution for exploiting natural resources (as water and salt) and organizing production and distribution of agricultural products in its territory. It was a way of appropriation and controlling the space.⁵⁰⁹

Since in dry areas water was of primary importance, civic centres, but also rural settlements, had to manage its availability. Only the former had the economic resources and manpower (and needs) for large hydraulic projects; by constructing aqueducts, *qanats* and dams, cities could provide water both for civic purposes than for lands that needed irrigating. However, these projects required considerable organization and expense.

For what it concerns agricultural production, cities of course, depended on their hinterlands, so it was in the interest of the civic centres to develop their resources. In this respect the long distance trade of Palmyra is linked with the development of the hinterland as demonstrated by the northwestern Palmyrena area: it is at the same time and in a circular way the pre-requisite and purpose of this expansion.⁵¹⁰ Both the city and the Roman state were acting in their own interests by stimulating the primary mode of production.⁵¹¹ In fact, at the same time, peasants in villages and pastoralists in rural areas were attracted to Palmyra as an economic and administrative center. They relied, for instance, on the security and communication infrastructures provided through the city's administration and on the economic opportunity that Palmyra, as an exchange market, provided.⁵¹²

During the period of Roman rule the settled rural population increased enormously in Syria and Near East. Marginal lands such as steppe and stony highlands were occupied more intensively than any time before. This growth is most striking in Late Antiquity, and the trend in Syria seems

⁵⁰⁹ Hauser 2012, 221-222.

⁵¹⁰ For the Northwest Palmyrena see Meyer 2014 (forthcoming). See also Smith 2013, 48-52, 68-74.

⁵¹¹ Butcher 2003, 179.

⁵¹² This is proven by the Tax Law inscription. On the communication's infrastructures, cfr. the following chapter.

to be part of an empire-wide phenomenon.⁵¹³ Far from exhausting its resources, the Roman Empire appears to have stimulated a more efficient agricultural exploitation. In the steppe the growth of a system of forts was accompanied by irrigation systems, which were probably developed by garrisons. According to this model there is a symbiotic relationship between military and the countryside rather than purely between city and country.⁵¹⁴

Cities were also the products of social processes between country-dwellers and city-dwellers but their relationship might sometimes be described as more symbiotic than one of dominance and submission. In antiquity control of production and distribution of food, but also of natural resources, in the Near East especially water, was the surest way to power, and that control could be achieved by urban or rural elites through social institutions like the city state.⁵¹⁵

Both the dichotomy of city/village and consumer/producer for the ancient city and its hinterland oversimplifies the complexity of relationships suggested by the evidence derived from archaeology.⁵¹⁶ It seems likely that cities provided an organizational framework for all forms of production within their territories: raw materials for production in the cities are often likely to have originated in the countryside, so production in the two locations was intimately linked.⁵¹⁷ Cities might organize the product redistribution, and its taxation, within their territory or export of them to long distances.⁵¹⁸

Generalizations are difficult from the varied textual and material data available, but archaeological support for an elaborate economic and social interrelationship between city and country is growing.⁵¹⁹ They represented a complex but integrated system.

This chapter aims to explore the natural resources available and how they were exploited in the Southwest Palmyrena, as well as its local production, in order to better understand how the city was interconnected and interacted with its hinterland. In other words, how the city was able to appropriate and control the space. The analysis will be done not only considering economic aspects but also from a social point of view.

⁵¹³ Parker 2006 for Central Jordan.

⁵¹⁴ Cfr. Chapter 5.

⁵¹⁵ Butcher 2003, 136.

⁵¹⁶ Smith 2013, Sommer 2005a, 2005b and 2012; Szuchmann 2009.

⁵¹⁷ For example in the Tax Law of Palmyra, lines 56, 89-97 (Palmyrene); 84(Greek), are mentioned a tax on skins and wool not manufactured yet.

⁵¹⁸ As it is the case of the products listed in Tax Law of Palmyra. A perfect example can be considered the salt extracted from the local saline, see chap. 4.2.

⁵¹⁹ Meyer 2014 (forthcoming).

4.2. The salt industry⁵²⁰

Among the mineral substances extracted since the remote times, salt has been one of the most precious. This fact is proven by numerous kinds of uses it had and the attention given to the salt exploitation areas in ancient times. For example, Pliny the Elder (1st century A.D.), apart for a lot of sparse references, dedicated to it an extended study (*NH* 31, 73-92) where he elucidated its natural features, origins/locations and methods of exploitation.

In all cultures, salt had very different symbolic and practical functions. For what it concerns the symbolic aspect, it appears, in Classical times, as a gift from the Gods among other numerous resources offered by nature.⁵²¹ Therefore, it allows for a privileged relation with Gods or God: as a mediator, it participates in many aspects of a culture. However, like many other basic symbols of remote origins, its perception was ambivalent. Most of its symbolic functions derive from its practical multiple features; it has been valued for both its corrosive and therefore destructive nature, and for its antiseptic and preservative qualities.⁵²² For what it concerns its practical functions, salt was (and still is) an essential dietary item for both human nutrition and animal breeding. In fact, animals are “genetically designed” to search for the quantity of sodium their body requires, but it is a common practice among farmers to give livestock salt, usually mixed with fodder, to complement their diet, i.e. their hydromineral balance. It facilitates reproduction, gestation and breastfeeding. Nothing better than salt stimulates the appetite of sheep, cattle and beasts of burden; their milk is more abundant and the cheese even of better quality.⁵²³

For all these reasons, since Prehistoric times there has always been a complementary connection between salt exploitation and transhumant pastoralism, especially in the Near East areas.⁵²⁴

Of course salt was used in many receipts such as bread and cheese making. Moreover, it was used for flavoring, pickling, curing and preserving meat and fish, but also in the making of wine. In this manner, because the products lasted longer, they could be easily transported and consequently traded everywhere. Salt was also employed for artisanal purposes: for dyeing and tanning processes of leather and/or skins, as fuel for lamps, in cosmetic products; as well as in medical treatments (as therapeutic auxiliary and for parturition) or in pharmacology (for example in

⁵²⁰ A provisional study on the exploitation of Palmyra’s saline and therefore the mechanisms of interaction between the city and its hinterland has been already presented in December 2011 during the workshop *Archaeology and history of Palmyrene Trade*, hold at the Norwegian Institute in Athens, organized by the University of Bergen’s Palmyrena Project. The paragraph I am presenting here it’s based on that work but it has been updated through new or more recent bibliography.

⁵²¹ For what it concerns the importance of salt in the Near East in pre-classical times see Potts 1984 and Moga 2009.

⁵²² For a deeper discussion on the symbolism of salt in Classical Antiquity I refer to the recent book of Bernard Moinier (2012), especially pp. 17-68.

⁵²³ Plin. *NH* 31, 88: *quin et pecudes armentaque et iumenta sale maxime sollicitantur ad pastus, multo tum largiore lacte multoque gratiores etiam in caseo dote*. Cfr. also Moinier 2012, 107-116.

⁵²⁴ See below.

collyrium and gingival creams). Finally, within its mediatic role with deities, it was practically used in religious and magical rituals and funerary activity.⁵²⁵

Salt was therefore an important and essential natural resource for any economy in ancient time as perfectly understood by Pliny the Elder who stated: *ergo, Hercules, vita humanior sine sale non quit degi, adeoque necessarium elementum est* (“a civilized life is impossible without salt”).⁵²⁶

It occurs naturally in several forms: as rock salt, in briny lakes or marshes, usually called saline or salterns, in the sea, and in exploitable high concentrations in certain plants.⁵²⁷ According to the specific place of extraction and the technique used, different varieties are actually known. Therefore, its aspect was always colorless or white, but also yellow, green, brown, blue, red or even black, because of the impurities retained by the brines or the influence of specific bacteria like *Haematococcus pluvialis*.⁵²⁸

At Palmyra, salt was extracted from an area called Sebkhah al-Mouh, or mud-flat, south of oasis (Fig. 4.1).⁵²⁹

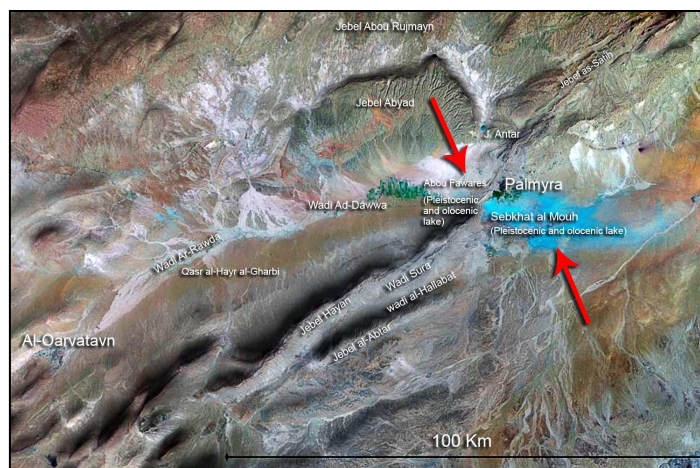


Fig. 4.1. Location of the Palmyrene saline.
(Image courtesy of Prof. D. Morandi Bonacossi and M. Cremaschi)

The saline were still productive until the 20th century: in 1912 Alois Musil, relating about modern Palmyra, reported that “the main source of Palmyrenes’ income is the salt which they gather in the nearby saline, disposing of it again to the *fellahin* from around Homs and Hama either for money

⁵²⁵ For a more detailed description of all these uses I refer to Moinier 2012, 47-63, 115-202.

⁵²⁶ *NH* 31, 88. Pliny’s statement has to be understood not only from a practical point of view but also from a cultural and religious one. Salt was synonymous of educated/civilized life, people who did not use salt were considered outside of civilization. See Moinier 2012, 18-27.

⁵²⁷ Potts 1984, 235-247. Cfr. Plin. *NH* 31, 83 (40) for the black salt obtained by pouring salt water upon burning wood.

⁵²⁸ Moga 2009, 177; Potts, 1984, 246-247.

⁵²⁹ Matthews 1984, 188, n. 43; Cremaschi, Zerboni 2012; Hammad 2010, 79; Yon 2002, 130; Smith 2013, 70-71. Cfr. also chap. 1.2.

or in exchange for wheat and barley”.⁵³⁰ Nowadays, however, there are regulations that prevent salt exploitation from this area primarily because of the excessive amount of water required to generate deposits.⁵³¹

The area has an irregular form around 24 km (E-W) and 15 km (N-S). In normal years the *sebkhat* surface is around 330 km² and can rise up to 510 in really wet years.⁵³² Even during dry periods the phreatic water table, fed by three water sources,⁵³³ merges in winter making the area impossible to cross. In the summer months, due to a high temperature, the solutes, transported during the rains of winter, evaporate causing a concentration of salt in the surface (Fig. 4.2. a-c).⁵³⁴

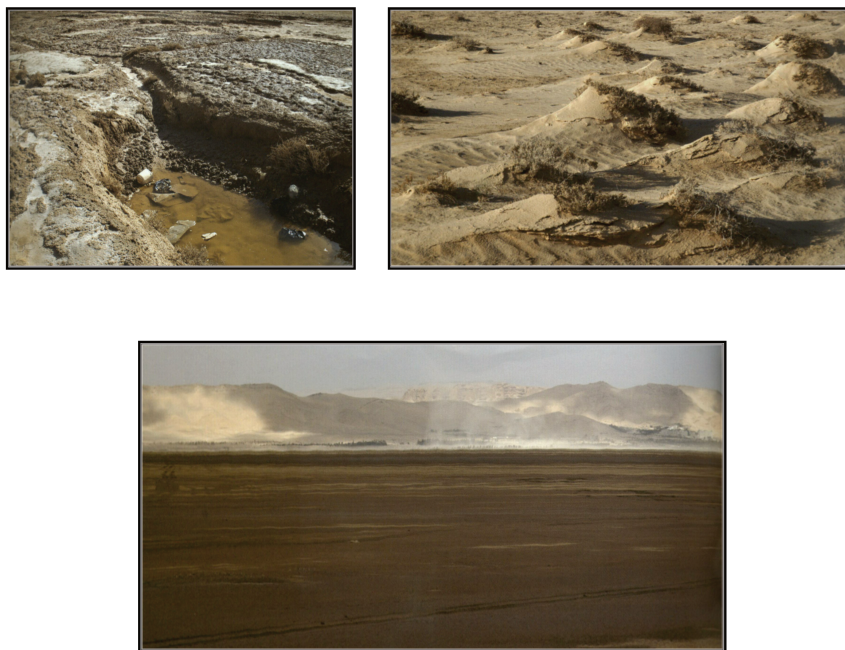


Fig. 4.2. a-c. The Sebkhat al-Mouh.
(Hammad 2010, Fig. 152-154)

Unfortunately, it is not possible to establish how extended the area in antiquity was. This would be useful in order to understand the amount of salt available for sale.

Since 2008 the joint Italo-Syrian mission of Prof. Mauro Cremaschi and Prof. Daniele Morandi Bonacossi has been conducting a geoarchaeological survey in this area in order to investigate the environmental changes occurred and the cultural dynamics related. The results have led to conclude that the territory of Palmyra, including the Sebkhat, went through opposite

⁵³⁰ Musil 1928, 146. Also Wirth 1971, 445.

⁵³¹ Smith 2013, 70 n. 92.

⁵³² Hammad 2010, 79.

⁵³³ Idem. Around 380-385 m of altitude.

⁵³⁴ For a description on the saline in the earlier travellers to Palmyra see: Addison 1838, 326-327 and Halifax 1695-1697, 84-85.

environmental changes. Between late Pleistocene and early Holocene the area was a freshwater lake basin and the shores of the lake were inhabited by different communities of hunter-gatherers and early farmers, as testified by a dense concentration of sites. Then, after the Mousterian, when the climate changed from humid to dry, it was replaced by a less extended seasonally-flooded, saline marsh (a *sebkhat*), which is the present day situation.⁵³⁵

Thanks to an inscription from ancient Palmyra, which will be analyzed below, it is known that the Sebkhat al-Mouh was exploited during Roman time but unfortunately, no archaeological evidences of this activity have been found.⁵³⁶ However, as stated above, due to the type of climate in these regions, salt was easily available by natural evaporation, under the action of the sunrays. This was, and still is, the case for other areas of the Near East and in the Mediterranean.

The method of extraction can be easily imagined from Pliny's account: he depicted the fact that the margins of the salt lakes in Phrygia and Cappadocia (therefore including Tuz Gölü) used to dry out so much that sometimes salt reached even the center of those lakes. According to this depiction, lumps and bricks of salt were obtained in the area and it is easy to suppose that there were directly exploited by gathering the salt into piles, because such a technique is mentioned afterward, but with reference to Bactria, Cyprus, Egypt and northern Africa.⁵³⁷ Because it contains impurities, like magnesium chloride or magnesium salt, which is a deliquescent substance, the unrefined sea salt attracts moisture from the air.⁵³⁸ Cato even gave some advice in order to refine the crude salt at home.⁵³⁹ Of course, this is a simplified view over the whole process, because in practice the separation of impurities was certainly more complex.⁵⁴⁰

Unfortunately, no archaeological evidences have been found of how were the processes of salt extraction and distribution organized in the Palmyrena and who carried out them. Therefore, in order to understand this complex activity it is possible to rely only on epigraphical sources and indirectly, by comparison with other areas or other historical situations, which implies also that any considerations proposed have to be considered provisional.

⁵³⁵ Morandi Bonacossi, Iamoni 2012, 32-35.

⁵³⁶ See below. There is a large chance that they were exploited also in pre-classical times, in connection with transhumance pastoralism but there are no literary or archaeological evidences available.

⁵³⁷ Plin. *NH*, 31, 74-77, 81-82. See also Moga 2009, 179-181.

⁵³⁸ Forbes 1955, 163-164.

⁵³⁹ Cato, *Agr. Orig.* 88: «Recipe for bleaching salt: Break off the neck of a clean amphora, fill with clear water, and place in the sun. Suspend in it a basket filled with common salt and shake and renew from time to time. Do this daily several times a day until the salt ceases to dissolve for two days. You can find when it is saturated by this test: place a small dried fish or an egg in it, and if it floats you have a brine strong enough to pickle meat or cheese or salted fish. Place this brine in flat vessels or in pans and expose it to the sun. Keep it in the sun until it solidifies and you will have a pure salt. In cloudy weather or at night put it under cover, but expose it to the sun every day when there is sunshine».

⁵⁴⁰ Forbes 1955, 165-166.

The unique epigraphical source known, mentioning salt, is the so-called Tax Law of Palmyra. The tariff, a bilingual inscription (Palmyrene and Greek), was discovered in 1881 in Palmyra, just outside the agora in a very lower level, by the Russian prince Abamelek Lazarew and transported in 1901 at the Hermitage Museum where is still preserved today (inventory number 4187).⁵⁴¹

The stele is around 1.75 m high, without counting the base, and almost 5 m long and it bears almost 400 lines of text organized into four columns. The first one presents the Palmyrene title «The law of the taxes of the port of exchange of *Hadriana Tadmor* and the springs of water of *Aelius Caesar*»,⁵⁴² followed by the text of the local senate decree of A.D. 137 both in Greek and Palmyrene. The second column is the Palmyrene version of the law; the third and the fourth ones the Greek (Fig. 4.3).

The document itself is quite damaged and presents many problems of interpretation. The Greek text (G.) is very mutilated. The Palmyrene part (P.) shows large gaps but allows understanding the law better than the Greek one.



Fig. 4.3. The Palmyrene Tax Law.
(Teixidor 1983, 237)

⁵⁴¹ Lönnqvist 2008, 75-7; Matthews 1984, 173-180; Teixidor 1984, 57-90. For pictures of the Tax Law in its actual location: <http://www.hist.uib.no/antikk/dias/Palmyra/Tarif/index.htm>.

⁵⁴² *Nmws' dy mks' dy lmn' dy hdryn' tdmr w 'ynt' dy my' [dy' y]ls qysr*. The word *lmn'* has been considered commonly as a transcription of the Greek λιμένος / harbour, translating the Latin term *portus*, not in the narrow sense of the word, but as “any point where a transit tax, or *portorium* was exacted”. See Piacentini 2001-2002, 527 n. 18 and Matthews 1984, 172. The Semitic correspondent was *mhwz* (Teixidor 1983, 236). Instead Bowersock (1989, 71) considers *mhwz* as a perfect translation for a fortified place thus a term used for meaning the new civic fortifications. However in an article of 1979, Lubetski proposed that, contrary of what is usually supposed, *limen* is not a Greek contribution but shared a common Egypto-Semitic creation (*mni'* = *port*) with other Indo-European and the Semitic languages. This result was achieved by the two-pronged influence of *mni'*. In the Egypto-Semitic (Delta of Nile) form of **mnl > lmn* it had an impact on the Greek, Hebrew, and Syriac languages. The Pharaonic Egyptian form *mi'n'* or *mni'* developed into the Coptic forms, one of which was incorporated into Arabic (Egyptian *mi'ni'/mni'*; Coptic *mene > Arabic mīnā'/mīnah*). So the word *limen* in the Tax Law does not own any credit to its Greek version and the larger sense of port as trade post in Semitic languages is already very old as testified by Akkadian word *kāru* (identified as *mahoz* = harbour that at its turn belongs to the branch developed from the Egyptian original) which means a customs-house at the harbour or trading post where taxes and dues are collected. Probably this word had influenced also one less-common meaning of *limen* as agora (= market-place), in use in the Greek of Thessaly and Paphos. See Lubetski 1979, in particular 169-170 and 176-177.

The taxes throughout the tariff inscription are assessed according to the type of goods, their weight and related method of containment, and their means of transport.

The Tax Law was initially interpreted as a tax for goods coming from the Far East to Palmyra, consequently being an evidence for the famous wealth of city.⁵⁴³ But when we look at the commodities listed, it is clear that the reference is to the local market traffic. They comprise, for example, dried goods (included dried fish), olive oil, lard, and pinecones as well as the sale of slaves and the activity of prostitutes. There is no mention of the exotic goods that made Palmyrene trade so famous, such as spices or silk, apart for unguents or aromatic oils (P. 17-22) and purple wool (P. 11). It is undeniable that these suggest a higher level of luxury, especially when imported in alabaster vessels rather than goatskins (G. 23-31), but nothing beyond the possibility of the upper-class members of the Palmyrene society. Therefore, these commodities too were probably designated to local sale.⁵⁴⁴ Moreover, as suggested by Meyer, we should not expect the tariff to deal with all the taxes in Palmyrene territory.⁵⁴⁵ It is stated in the introduction to the law that the main purpose is to fix, in more detail, the dues, which before were instead exacted by convention, and so avoiding dispute between the merchants and the tax farmers due to overcharging.⁵⁴⁶ The purpose of the law was not to guarantee the income for the city from all taxable areas or items, but to avoid conflicts between tax farmers and merchants, not between tax farmers and nomads.

Since its publication in the *Corpus Inscriptiones Semiticarum (CIS)* vol. II nr. 3913 by Chabot, in 1924, there has been a long debate over internal organization and chronology of the text.⁵⁴⁷ Scholars now agree to consider the inscription as a homogeneous text starting with the fiscal law emanated in A.D. 137 by the council of the city both in Palmyrene and Greek (P. 2-62 and G. 1-93), maybe based on a Latin original.⁵⁴⁸ Then the tariff reports a fragment of an ancient law “according to an agreement made in presence of *Marinus* the governor” (P. 63-149; G. 94-237),⁵⁴⁹

⁵⁴³ Dessau 1884, 527. He was the first one to publish the Greek part. Same opinion Rostovzeff 1932, 108.

⁵⁴⁴ Lipinski 1985-1986, 228; Lönnqvist 2008, 76; Matthews 1984, 172; Stoneman 1992, 58-60. The same case concerns also bronze statues mentioned at P. 128-130.

⁵⁴⁵ Meyer 2014 (forthcoming).

⁵⁴⁶ G. 1-13, P. 1-11.

⁵⁴⁷ Lipinski 1985-1986, 227-236. After the *CIS* many editions have been published until the recent one, that I am using here in the quotations, within the project of the Macquarie University of Sydney to re-publish in English some commercial inscriptions of Palmyra (Gardner *et alii* 2005, 36-54).

⁵⁴⁸ This was based upon the view that the Greek *limen* would have meant as the Latin *portus* as the Palmyrene transliteration *lmn* (Teixidor 1984, 58). Bowersock (1989, 71) argued against this view stating that it means in Hellenistic Greek a tax district.

⁵⁴⁹ Unfortunately it is not possible to date exactly this part of the text since no Roman *legatus* called *Marinus* is known from other sources. He may have been *P. Valerius Marinus*, consul designed by Galba (for A.D. 69) but deferred by Vitellius, in his earlier career, so in A.D. 63 or A.D. 67 (Matthews 1984, 178 n. 23). In any case, on the basis of the Romans mentioned among this part, all the ancient regulations has been dated to the 1st century. Apart for *Germanicus*, *Mucianus* and *Corbulo* (see following notes), a certain *Alcimus/Alkimos* and *Statilius* are mentioned (G. 157, 182/P. 77, 104) are mentioned. According to Lönnqvist 2008, (76-77) they are the same *Caius Virius Alcimus* and *Titus Statilius Hermes* mentioned in a funerary inscription dated to A.D. 57/58 (As'ad, Yon 2001b, 16). The first

which reclaims an edict of *legatus pro praetore Gaius Licinius Mucianus* (G. 151-237; P. 74-149)⁵⁵⁰. At its turn the edict of Mucianus refers back to earlier pronouncements of *Germanicus Caesar* (P. 182)⁵⁵¹ and *Domitius Corbulo* (P. 196-197).⁵⁵² The intervention of the Roman authorities in the affairs of the city already at the beginning of the 1st century A.D. is undeniable. Recently, Lönnqvist proposed to consider the old tariff also as an attempt by the Roman power to impose a new settlement of taxation and monetary system. This not just in Palmyra, but in whole new province of Syria, probably in relation to *Germanicus*'s visit in to the region in A.D. 17-19.⁵⁵³ The dispositions added later in A.D. 137 were intended to avoid future disputes that had arisen between tax collectors and the merchants, tradesmen and others involved in the tax levy (G. 7; P.7).

Salt is mentioned in the Tax Law three times, all of them within the ancient part of the law:

a) P. 63-65 (G. 94-96 but illegible)⁵⁵⁴

Title of the ancient law:

«The ta[x-la]w of Tadmor <concerning> the springs of water and the salt which is in the city and its territories, according to the c[ontracts wh]ich we[re] drawn up before *Marinus* the governor».

b) P. 69-73⁵⁵⁵:

«[Salt] will be rightly taxed at one *assarius* for the *modius* of [si]xteen *sextarii* and when it is requested, he will give (it) [to th]em for use. And [whoever] will not [measure it out will] be charged for every *modius* according to this l[a]w, [two] *sestertii*. Whoever has salt in Tad[mor] or in the territory of the T[admoren]es, will measure it out to (pay) [the tax-collecto]r [ac]cording to the *modius* at one *assarius* (one as per *modius*)».

G.116-120⁵⁵⁶:

«Whoever shall have salt in Pamyra or [in the regions] of Palmyra, let him measure out to the tax-collector [1] *assarius* for each *modius*. Whoever would not [.....] measure out [.....] having the [....] tax co[llector ...]».

c) P. 130- 137 (Greek missed)⁵⁵⁷:

is defined as tax collector but no specification is made for the latter but since *Alcimus* is probably a *libertus*' name, maybe *Statilius* was his master.

⁵⁵⁰ *Gaius Licinius Mucianus* was *legatus* of Syria in A.D. 67-69.

⁵⁵¹ *Germanicus Caesar* was in the East with special powers in A.D. 18-19 (Matthews 1984, 179 n. 30).

⁵⁵² *G. Domitius Corbulo* was an imperial legate in Syria under Nero, c. A.D. 60-63 (Matthews 1984, 179 n. 35)

⁵⁵³ Lönnqvist 2008, 77.

⁵⁵⁴ Nm[ws] dy mk[s] dy tdmr w'ynt' dy my' wml[h] d]y b[m]dyt' wthwmyh hyk / '[gwry] d]y '[t]'gr qdm mryns hygmn'.

⁵⁵⁵ [mlh] tb [ytg]b' 'sr' hd lmdy' dy qstwn / 'šr w[š]t [w]m' dy ytb' ytn [lh]n ltšmyš / w[dy] l' y[...y]pr' lkl md' mn nm[ws] dnh sstrty[n] [trn] / mn dy yhw' lh mlh btd[mr]wbthw]m' d]y / t[dmry]' ykylnh l[mks]' [']pymdy' b'sr' hd.

⁵⁵⁶ Ὀς δ' ἄν ἄλα

«As for the [imported] salt it seems right to me,⁵⁵⁸ that it should be sold in the public place where people assemble; and (that) any Tadmorene who purchases (it) for his use will pay (one) Itali[an] *assarius per modius*, as is (stated) in the law. And also the tax on salt which is in Tadmor, as in [...] will be reckoned at (one) *assarius*, and will be sold to [the Tadmorenes], according to the custom».

Combining the last two sections it is possible to recognize that salt sale in Palmyra was subjected to a monopoly. The Roman imperial taxation collected quite a great levy on the saline of the city: the publican⁵⁵⁹ was in charge of collecting an *assarius per modius* of salt (P. 69, G. 118).⁵⁶⁰ Teixidor proposed that the Roman dry measure known as *modiu*, and mentioned here in the tariff, was probably, the *modius italicum* of 8.75 litres, not the *modius castrensis* used in the Diocletian Edict, which was one and half the *italicum* one.⁵⁶¹ The Tax Law specifies also that a *modius* must be of 16 *sextarii* (P. 69-70), which implies for the *sextarius* a measure of 0.539 litres.⁵⁶² The owners paid the tax before selling the salt and the buyers at the time of purchase⁵⁶³ but the Tax Law does not state if the Palmyrenes were required to buy individually a fixed amount of salt.⁵⁶⁴ A penal rate of two *sestertii* for each *modius* had to be paid by anyone not making a declaration (P.71).

The second part (P. 130-137) integrates the first one because probably the ancient dispositions might have created some abuses. The traders for example could have sold more salt than the quantity permitted, or the buyers may have paid the taxes with a different currency. In order to avoid this, the regulation specifies that the *assarius* had to be the *italicum* one (P. 133),⁵⁶⁵ which was less valuable than the imperial one (1/16 of a *denarius*).⁵⁶⁶

To better understand the text, it would be useful to relate salt to other products linked with it, such as meat, dairy products, animals and hides. Unfortunately there is no mention of dairy products in

⁵⁵⁷ *bplgwt [t'w]n wšlmyn trn t'wn 'l mlh' / qšt[']thzy ly dy b'tr dy dms thw' / mtzbn' b'tr dy mtknšyn wmn mn tdmry' / yzbn lhš[h]th yhw' yhb lmdy' 'sr 'ytlq['] / hyk bnmws' w'p mks' [m]lh' dy hwy' / btdmr hyk bh[. ...] 'pr 'sr yhw' / mtqbl wl[idmry]' yhw' mzbh hyk 'yd' / [Mk]s' dy 'rgwn' bdyd dy.*

⁵⁵⁸ This part is referring to the pronouncement of the *legatus pro pretore* of Syria, *Mucianus* (see above).

⁵⁵⁹ There is a gap at this point of the text. According to Chabot 1924, *CIS* 3913, after *ykylnh l-* almost all scholars have decided for *mks* = publican but Matthews 1984 proposed to read 'gwr' = farmer.

⁵⁶⁰ P. 69: 'sr' *hd lmdy'* = one *assarius per modius*. G. 118 : ε[ισ̄] ἔκ[α]στον μόδιον.

⁵⁶¹ Teixidor 1984, 80-1.

⁵⁶² P. 69-70: *dy qst.wn 'sr w[š]t* = which (is) *sextarii* ten and six.

⁵⁶³ This double (seller and buyer) tax on salt is not unique. Cities in the ancient world were very inventive to find new revenues, as indeed attested by the Tax Law itself, by taxing all levels of the economic transactions (Meyer 2014 forthcoming).

⁵⁶⁴ Teixidor 1984, 78. As it was instead the case in Hellenistic Egypt (Calrysse, Thompson 2006, 36-89).

⁵⁶⁵ P. 133: *yhb lmdy' 'sr 'ytlq[']*.

⁵⁶⁶ For the monetary system used in Palmyra see Teixidor 1984, 80-82. Unfortunately, the local currency of Palmyra has never been studied in detail.

the Tax Law and it seems that salted meat (or salted fish) and herds were mentioned in lines 34-45 of the Palmyrene and 52-74 of Greek version but both of them are really damaged.⁵⁶⁷ Only between lines 102 and 108 of the Palmyrene version is there notice of the butcher's tax, which had to be paid, as usual, in Italic *assarius*, and the fact that hides, that had to be thrown away, were not subject to taxation.

After this brief analysis, it is clear that a lot of different questions arise from the text itself concerning linguistic and fiscal aspects. One for example would be how control was established over the product sold. In other words, was the administration mentioned in line 70 in charge of setting the amount or price of salt for sale or of confiscating part of that one gathered from the local saline, as it was the case in the Hellenistic Egypt from at least the 2nd century B.C., the only other example of State monopoly known?⁵⁶⁸ In Ptolemaic Egypt the salt-tax, which was introduced under Ptolemy II Philadelphus, most probably at some point around 264-263 B.C., was called *halikè* and was considered a poll tax or tax per person. It had to be paid both by male and female adults, while in Roman time only by males. Unfortunately, the connection between this salt-tax and the actual provision of salt remains unknown.⁵⁶⁹ We only know that salt belonged to the Lagide kings and the right to sell it was awarded by auctions.⁵⁷⁰ This might be the case if it is possible to interpret the expression of line 134 (*mks' [m] lh'*) as *sal fiscalis*, as suggested by Teixidor.⁵⁷¹ In this case lines 134-136 would have meant: once determined by the administration the quantity of salt to sell (*sal fiscalis*), this was bought by the Palmyrenes paying on the top of the price, a tax of one *assarius*.

Going back to the Palmyrene's inscription, the title of the old tariff (excerpt a) refers to salt, which is in the city and its hinterland. There may be here also an allusion to salt coming from more than one place within the Palmyrene borders. Apart for salt collected at the Sebkhath al-Mouh, there is no evidence for others saline within the Palmyrene border. A similar geomorphological situation may have existed for the much smaller paleolake of Abou Fawares (west of Palmyra) but it is really hard to say at the present knowledge.⁵⁷²

Furthermore, Palmyrene lines 130-136 (excerpt c) of the Tax Law have been interpreted as dividing between salt from Palmyra and imported one.⁵⁷³ Although we have to admit that the text

⁵⁶⁷ Teixidor 1984, 101; Matthews 1984, 176.

⁵⁶⁸ Actually the authors of PAT 0259, 421 translated as "to them" instead of administration, based on the Greek version.

⁵⁶⁹ Clarysse, Thompson 2006, 39, 86; Moinier 2012, 74.

⁵⁷⁰ Clarysse, Thompson 2006, 38.

⁵⁷¹ Teixidor 1984, 80.

⁵⁷² As orally suggested me by Prof. Morandi Bonacossi.

⁵⁷³ Gardner *et alii* 2005; Matthews 1984, 180 translated *wl[tdmry]' yhw' mzbn* as "salt put on sale to the Palmyrene" separated from the one "found at Palmyra".

itself does not provide a clear reference, it is probably not wrong to postulate that imported salt was required because either the local production was not enough or another quality of salt, not available in Palmyra, was needed. There are no evidences to establish exactly where the imported salt would have come from, it is possible to make only some hypothesis. In an important article, where the available archaeological data are integrated with ethno-historical, geological, and philological information, Potts made a list of many saline exploited in ancient Mesopotamia and still in use under the Ottomans rule as stated by a large number of travelers during the first half of the 20th century.⁵⁷⁴ These numerous salines were annually exploited by great numbers of Arabs belonging to many different tribes. Whatever was not consumed formed the basis of a caravan trade, which operated in a long corridor from Délím, just north of Ar-Ramadi, as far as Deir-ez Zor in Syria.⁵⁷⁵ The connection of Palmyra with this region, especially with Hit is largely known.⁵⁷⁶ Therefore, it may be supposed that on their way from Mesopotamia the Palmyrene traders brought salt as well as the eastern famous goods. As well, since collection of salt by Bedouin tribes of the southern Djazirah and its exchange in the urban centres of Mesopotamia in return for other necessities seems to date as early as the 4th/3rd millennium B.C.,⁵⁷⁷ it may be also possible to propose a co-existing system where also nomadic tribes from this region, like still was in modern times, brought this product to the Palmyra market, sometimes only in exchange for grain, butter, wool, and other commodities.⁵⁷⁸

Afterward, salt could also have been exported. Palmyrene lines 72-73 (excerpt b) state that whoever has salt in Tadmor or in the territory of the Tadmorenes, had to measure it and pay a tax. This does not exclude that after doing he could sell it even outside Palmyra.⁵⁷⁹ Still in 1735 the saline supplied salt for Damascus, Homs and their territories.⁵⁸⁰

Going back to the Tax Law text, it is clear that salt tax was under an imperial and public control. However, it is difficult to establish if and how this control was maintained over salt extraction. A possible hypothesis is that the authority was guaranteed by employing soldiers at some stages. Evidences for soldiers involved in taxes' collection, as well as a high level of Roman army's

⁵⁷⁴ For example Cuinet 1892-1894, 228. Potts 1984, 252: «We have already seen how very important the salines of Mesopotamia were in the late nineteenth century. It seems just as likely that they were equally important in the earlier periods of Mesopotamian history as well».

⁵⁷⁵ Cuinet 1892-1894, 32.

⁵⁷⁶ Poidebard 1934, 105-114.

⁵⁷⁷ Potts 1984; Bucellati 1990.

⁵⁷⁸ Cfr. also Hauser 2012, 219.

⁵⁷⁹ Teixdor 1984, 78.

⁵⁸⁰ Chabot 1922, 32-33. The situation continued until the beginning of the 20th century (Musil 1928, 146). See above.

engagement in extractive operations both in imperial quarries and mines are attested.⁵⁸¹ Nevertheless it is not possible to make sure assumptions for the Palmyrene situation. In any case, one may wonder also who was actually responsible for gathering the salt and bringing it to the market. The process used to take place in summer, when, due to the intense heat of this region, the saline became completely dried up and it was then simply a matter of collecting the crystallized salt in the surface. The profession of “salt gatherer” is attested already in the Fara/Shuruppak (southern Mesopotamia) texts of the Early Dynastic period (2550 B.C.) but not elucidated in any further detail.⁵⁸² McDowell, speaking about the Seleucid Empire, proposed that the tax should be exacted by the government only when salt was brought to the cities for sale.⁵⁸³ If so, as proposed by Potts and Simpson for the Mesopotamia, the people directly responsible for the extraction might have been local indigenous or nomadic tribes that knew the territory and the duty very well.⁵⁸⁴ In other words they were specialized on this task. This was still the situation under the Ottoman rule.⁵⁸⁵ None of them however, were full-time, professional salt gatherers. This may have been the case for Palmyra too. A possible ethnographical example for the Palmyrene territories, bearing in mind the limits of using ethnographical analogy for understanding ancient nomadism,⁵⁸⁶ could be the Solubba tribe.⁵⁸⁷



Fig. 4.4. a-b. Solubba tribesmen in robe made from gazelle skins (April 1914).
 (After Gertrude Bell Archive, Album X_092-093, Newcastle University Library:
http://www.gerty.ncl.ac.uk/photos_in_album.php?album_id=28&start=90)

⁵⁸¹ For soldiers involved with taxes see Pollard 2000, 100-104. See Hirt 2010, 168-185 for quarries and 185-201 for mines.

⁵⁸² Potts 1984, 253.

⁵⁸³ McDowell, 1935, 179-198.

⁵⁸⁴ Potts 1984, 252 and Simpson 2001, 65.

⁵⁸⁵ Potts 1984, 254.

⁵⁸⁶ Szuchman 2009.

⁵⁸⁷ Betts 1989.

The Solubba (Fig. 4.4. a-b), who became extinct around the middle of the 20th century, were a semi-nomadic, modern tribe different from the Bedouins. They were spread over much of the Arabian Peninsula but used to migrate far south into Nejd and as far north as Palmyra in the summer, to hunt gazelles herds, as stated by 19th and early 20th century travelers' records or administrative documents.⁵⁸⁸ They could be identified with the Se-lappdyu of Middle and Late Assyrian texts, and the Banu Sa-luba who lived in the area of Hira, Kalwadha, and villages on the Euphrates, at the time of the Arab conquest.⁵⁸⁹

The Solubba were famous gazelle-hunters but also hunted ostriches and antelopes, as stated by many travelers. In 1876, Barker, writing of his father's experiences in northern Syria, described their hunting method in detail. Although the name of the tribe is not given, its other characteristics, i.e. the apparent lack of livestock or property, the rearing of white asses and a reliance on gazelle meat, make it clear that he is referring to the Solubba.⁵⁹⁰ Moreover, according to Cuinet who wrote in 1891-92, a significant element of the Solubba's economy was the collection of salt from local salines in the southern Djazirah.⁵⁹¹ Clearly this was important for their own salting of gazelle meat and hides; but salt was also sold in Mosul, Baghdad, Deir ez-Zor, and other towns. The Solubba have been considered as a classic non-pastoral tribal case study. The evidence presented here for the link between their mass-hunting techniques and salt-gathering activities may reinforce this view. The Solubba of the 19th century may be intended as the last inheritors of a well-established form of desert economy.⁵⁹² This could be the same situation for the Palmyrene salt. In fact, there is an high concentration of desert kites in the Jebel Hayan, al-Khan and al-Abtar mountainous region, directly connected with the Sebkhath al-Mouh through the Wadi al-Hallabat, that can explain the presence of gazelle not only in rapport to migration paths, but also to the abundant availability of salt from the nearby salt lake.⁵⁹³ It may be possible that, in Roman times, semi-nomadic or nomadic tribes like Solubba, were employed as well as indigenous, by the local administration or by the land owners, if the land was private as suggested by Yon,⁵⁹⁴ in order to gather the salt and transport it in the public place. There it would be sold with a taxation of one *assarius per modius*. Of course this system of salt gathering could probably have existed alongside with other economical mechanisms of salt procurement and trade.

⁵⁸⁸ For example Lady Anne Blunt in 1879.

⁵⁸⁹ Simpson 1994, 79.

⁵⁹⁰ Simpson 1994, 79.

⁵⁹¹ Cuinet (1892-1894, 50) called them Slebs, as Musil 1928, due to noun contraction.

⁵⁹² Simpson 1994, 80.

⁵⁹³ Morandi Bonacossi, al-Maqdissi, Cremaschi 2010; Morandi, Iamoni 2012, 36-45; Kennedy 2012, 152-154.

⁵⁹⁴ Yon 2002, 130.

It could also happen that salt harvesters collected more amount of salt than the established one, with the purpose of selling it illegally at the market. A similar situation, in fact, is attested for example from Egypt. A Greek papyrus from Lykopolite nome and dated to 2nd century B.C. mentions certain Demetrios, named as registrar or controller. He is catching a local, Tothoes, in the act of pounded up quarried salt in his own home. Tothoes was arrested, the salt confiscated and his house put under seal.⁵⁹⁵ Roman administrators have probably inserted in the Tax Law clauses such as line 71 (with a penalty rate of 2 *sestertii* for each *modius* in case of no declaration) and have required to sale the salt in a public place such the agora (P. 131-131), in order to avoid this kind of problem. Indeed, as stated by Cuinet, the most vexing problem which faced the officers of the public Debt Administration of the Ottomans was clandestine extraction of salt by nomad groups, and the sale of that salt to sedentary villagers at a price below that which the state was charging.⁵⁹⁶

To conclude, it appears that the sell and purchase of salt coming from the Sebkhât al-Mouh was under the Roman imperial monopole that demanded the direct management and control of the process (probably both the tax-levy and extraction) to Palmyra. Some small margins for local action were probably still possible. This case illustrates the integration of the city with its hinterland, and it demonstrates the active role the city played to protect and manage the exploitation of its regional natural resources.⁵⁹⁷ However, due to the scarcity of documentation, we can only suggest the patterns and actors of the entire process.

4.3. Water resources and infrastructures

The territory of the Southwest Palmyrena, as seen in the first chapter, is below the 250 mm isohyet of rainfall per year, which represents, at least theoretically, the limit between dryland farming and irrigated agriculture. However, it is part of a “middle landscape”, not completely desert yet, where uncertainty and irregularity of rainfall weigh deeply on the lives of its inhabitants: the *badiya*. As most of internal Syria, the territory is characterized by a strong drought that has affected, since the pre-classical periods, lifestyle and relationship between man and the environment. In such a disadvantageous climatic and hydrological situation, humans had to develop different solutions.

In these areas, agriculture could not be linear (along a water course) or punctual (at a water source, whether artificial or natural), but always connected to irrigation. In fact, if the oases (such as Palmyra and Soukhne) can be fed by artesian sources, the same does not apply to the steppe areas

⁵⁹⁵ TCD Pap. Gr. Inv. 273. Cfr. Clarysse, Thompson 2006, 39.

⁵⁹⁶ Cuinet 1892-1894, 285.

⁵⁹⁷ Smith 2013, 68-81.

of *badiya*, where the only source of water is represented by a seasonal watercourse, i.e. a *wadi*. Therefore, despite the possibility of limited agriculture in the *wadis*' beds, humans have understood, from the outset, the importance of being able to use even in dry seasons a constant supply of water. They gradually found engineering solutions to retain, as much as possible, the available water (sometimes storing it for more than a year) to channel it for agricultural and urban purposes. This method allowed, in areas with a climate so "restrictive", to exploit lands that otherwise could not have been agriculturally exploitable. However, not without great damage to the soil.⁵⁹⁸

Consequently, climate and landscape constrained or shaped water supply and management. The rainfall season being short, the system is conceived to divert flood-waters into medium-term storage. Thereafter, the general economy of water consumption must be seen as the management of a non-renewable supply. Only hydraulic techniques that lead to a less extended evaporation, as for example a *qanat*, were and still are the most efficient in such environmental contexts.⁵⁹⁹ In some cases however, only relative simple hydraulic works (cisterns and small reservoirs), also accessible to small villages communities, could be built.

Concerning technical construction skills, it appears that Roman period was not innovative. They kept using techniques developed since older periods, apparently with the exception of *qanawat*. Roman works were characterized mostly by the multiplicity and the pragmatism of their promoters: they were for the most cost-effective (even on long-term) and well suited both to the natural hydraulic resources available and to the needs of the population.⁶⁰⁰ With one exception: the Harbaqa dam, which appears to be disproportionate to its context both to Roman and Omayyad time.

Remains of hydraulic installations are often inconspicuous, but difficult to interpret individually. Only an understanding of the whole system and the role of each constituent part allow diachronic and synchronic comparisons to be made.⁶⁰¹ This because most of these water installations have also lasted for a long time and/or have been reused even centuries after their abandonment. Therefore, water infrastructures observed only from ground surveys or from satellite images are the product of a "chronological squeeze" that without systematic investigations can lead to historical and archaeological misunderstandings.

⁵⁹⁸ Calvet, Geyer 1992, 128; Sanlaville 1990, 3; Metral, Sanlaville 1979, 230.

⁵⁹⁹ Braemer *et alii* 2010, 103.

⁶⁰⁰ Calvet, Geyer 1992, 129-130.

⁶⁰¹ Braemer *et alii* 2010, 91-94.

Unfortunately, any extensive and comprehensive study on the water system of the Palmyrena region has been carried out.⁶⁰² Archaeological data available come from surveys of limited areas and/or specific structures usually connected with military remains.

The structures dedicated to seasonal storage and regulating water distribution in the Southwest Palmyrena region were mainly:

- (1) Barrages, such as simple walls or more elaborated as dams.
- (2) Surface or subterranean channels, such as *qanawat*.
- (3) Simple storage facilities as cisterns and reservoirs both closed or open (*birkets*).
- (4) Wells either cut into the rock reaching the aquifer waters or dug at the edges of the *wadis*.

Dams formed a significant element in the water supply of the Near East from the Bronze Age onwards. Dams fulfill several roles in the overall scheme of water management. These include storage of water in the form of reservoirs, provision of water to aqueducts for water supply of settlements (derivation), provision of water for irrigation and water diversion and/or flood alleviation. In most instances dams perform a combination of two or more of these roles as well as providing water for subsidiary purposes such as milling. Conventionally, there are three basic forms of dam design: the gravity dam, the arched dam and the arch dam.⁶⁰³ A gravity dam (Fig. 4.5) functions on the principle that it is too massive to be affected by the pressure exerted by water stored behind it. Pressure on a gravity dam is concentrated at its base, hence its design as a wide-based structure. Gravity dams can be constructed out of either masonry (rubble core with a dressed-stone face) or earth, sometimes with a stone facing.



Fig. 4.5. A typical gravity dam: Harbaqa's one

(After Palmyra, Missione Geoarcheologica: <http://users.unimi.it/palmyra/ricerche/harbaqa.html> - consulted 30.08.2013)

The arched dam is very similar to the gravity dam since it resists to water pressure due to its weight. It is, however, usually curved in shape.

⁶⁰² Calvet and Geyer's study in the 1992, based on Bauzou's 1980s survey, is still the most completed one but it examines only the Harbaqa dam and few forts' water installations (Khan al-Manquora and Khan al-Qattar).

⁶⁰³ Kamash 2009, 54-74; Schnitter 1994, 65-75.

The arch dam functions on a different basis and its existence in the Roman and late Roman periods is controversial. The arch dam has a convex water face and resists water pressure by transmitting the stress horizontally and hence does not require the weight or thick base of a gravity dam. According to Kamash's study, dams in the Near East showed little or no stylistic coherence, which makes their dating problematic.⁶⁰⁴ One of the biggest problems encountered in dating dams is the fact that they have often been in use over several periods, either continuously or reconstructed in later periods. In some cases, such as the Harbaqa dam, the re-use of the dam more than once in centuries has led to controversy over the original date of the structure.

A *qanat* (pl. *qanawat* in the Near East) or *foggara* (pl. *fagāgīr* in North Africa) was, and still is, the most common method to bring up subterranean water to the surface using gravity principles in areas where surface water supplies are sporadic as the groundwater provides a resource that can be tapped throughout the year even if there are seasonal fluctuations in the water table.⁶⁰⁵ There is a strong correlation between the location of *qanats* and evapotranspiration and rainfall. In fact, the annual average precipitation has to be between 150 and 400 mm. Another important factor correlated is the soil pattern, which should be slightly undulate. Slopes too abrupt cause loss of water during the streaming while a flat surface, instead, has not the inclination required to conduct the water up to the surface without a considerable loss of water. Moreover, *qanats* depend also on geology: surface layers of the soil are permeable and surmounting impermeable rocks. The permeability must, however, be little high otherwise wells do not have enough collection surface. In the east, alluvial aquifers occurring along major river valleys and beneath alluvial fans at the margins of highland areas and larger *wadis*, are widespread. These aquifers provide water at a shallow depth and are therefore ideal for *qanat* construction.

A *qanat* or chain well is a subterranean gallery that taps an aquifer and leads it to lower-lying ground using gravity flow. The word *qanat* is actually used for two different systems, whose major different lays in the hydrological structure: either the *qanat* catches the *wadi* subterranean flow in the thalwegs of the meridian valleys fed by water flow in the upper valley or it exploits the piedmont water table. In such cases, it is excavated at the limit between the mountain or hill massif and the plain. It can also exploit artesian springs. Above ground its course is marked by the presence of circular spoil heaps (*naqqabat*), spaced at regular intervals that are used for maintenance and are a key construction feature (Fig. 4.6, 4.17, 4.19). In fact, they acted as ventilation and access points but also for extracting spoil when the tunnel was being dug.

⁶⁰⁴ Kamash 2009, 65-68.

⁶⁰⁵ For a general bibliography on *qanat* system (construction technique and function) see Braemer *et alii* 2010; Butcher 2003, 164; Kamash 2009, 74-84 and Kobori 1990.

The *qanawat* varied in length from 100 m to 9 km with half of the *qanawat* whose lengths are known lying in the 1 km - 5 km brackets. These shafts were spaced at intervals of between 10 m and 22 m and mother wells varied in depth from 6 m to as deep as 30 m (Abou Fawares). The tunnel cross-sections varied in width from 0.4 m to 1.0 m and in depth from 1.6 m to 2.5 m.

Some *qanawat* may show masonry revetment or architectural decoration as in the case of Umm al-Omi *qanat* at Palmyra. With nine steps of marble and an entrance gate with a sculptured arcade this *qanat* exhibits the most architectural decoration of any other in the east.⁶⁰⁶

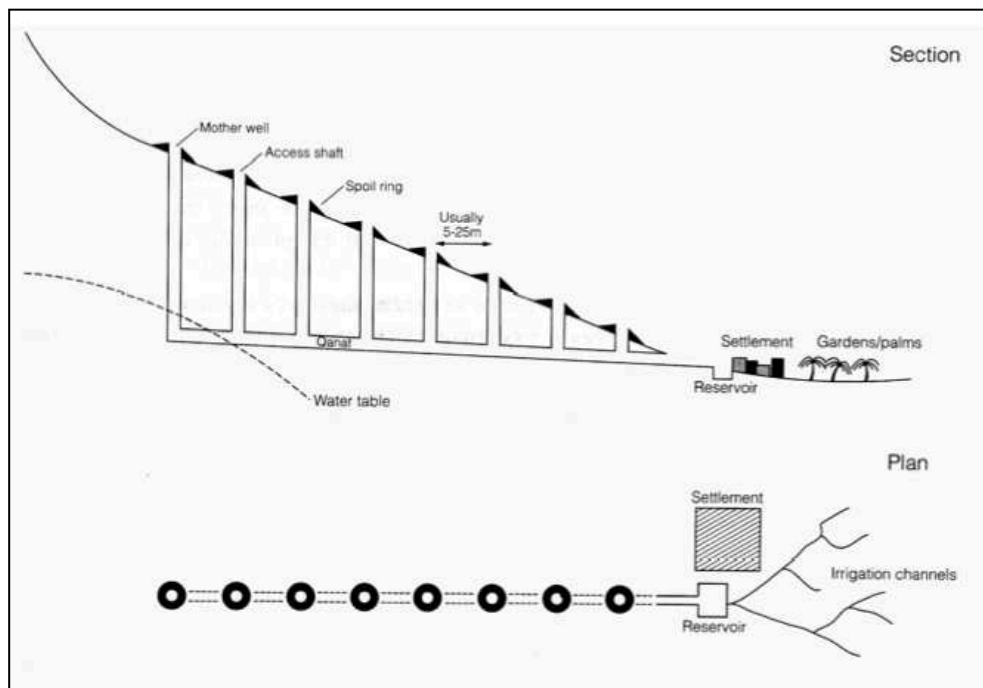


Fig. 4.6. Schematic cross-section and plan of a typical *qanat* system.
(Kamash 2009, Fig. 5.3.)

A *qanat* could be used to supply settlements, even if quite far away, delivering water to a channel, an aqueduct or to an outlet, often in the form of a large basin. However, it could be use also for agricultural purposes, bringing water to the fields through canals, as it appears to be the case for those at al-Basiri and al-Sukkarye. Or even for both uses, as, perhaps, at Abou Fawares. In any case it represents an active investment in the availability of water, not only for local consumption but also for the requirements of the long-distance trade, whether for drinking water or for agricultural irrigation, food production and pasture.

The date of the introduction of *qanawat* in the region is still debated. The presence of Palmyrene *graffiti*, inside the Umm al-Omi *qanat*'s channel, that brings water from 7 km north to Palmyra,

⁶⁰⁶ Bounni, As'ad 1989, 130; Kobori 1990, 322; Wood 1753.

has been cited as argument for an early date for *qanawat* at Palmyra (i.e. before the late Roman period). Otherwise, according to scholars, one would expect to have found Greek inscriptions as well. Unfortunately, the texts have never been published but further work on these inscriptions would be very useful given the potential importance of the date of these *qanawat*.⁶⁰⁷

This situation has clear consequences for any conclusive assessment of where the East lies chronologically in the transfer of *qanat* technology. The evidence seems to point to the fact that they were present in the area by late Roman period. However, there seems to be no positive evidence to suggest that *qanawat* were in the region in the Pre-Roman period. Kamash suggested that they were introduced during the Roman period and supposed that the technology came either from Persia or from Arabian peninsular via desert trade.⁶⁰⁸ As already pointed out above, most of these *qanawat* have lasted for a long time and/or have been reused even centuries after their abandonment. Therefore, without proper analysis it is very difficult to date the construction and period of usage, only on a typological base.

For what it concerns simple storing facilities, underground rock carved cisterns, as at Khan al-Trab fed by runoff water, were the most common way of storing water in this region. Dark underground cisterns have low evaporation and discourage rapid algae growth. A reservoir requires careful control to operate properly. It is not built in the main path of a stream to avoid being washed out or filled with sediment each year. Instead it lies next to the main stream and fed by underground channel system. Generally the main stream has to be controlled with a temporary dam to divert the water into the channel system. Then the dam is destroyed when the reservoir is filled. There are one or more small settling basins (small tanks) to allow silt and clay to settle before reaching the main reservoir, as for example at Khan al-Qattar, Khan al-Manquora and Khan Aneybeh. These settling tanks have to be cleaned often since windblown silt and dust also accumulate in the reservoir.

The development of villages in places like the Negev suggests that even such inhospitable environments, as dry steppe and semi-desert, were capable of producing significant agricultural surpluses if the right strategies for water collection and storage were pursued.⁶⁰⁹

All the water installations listed above require efforts and investments. The more elaborate ones and those surely connected with Roman forts were likely to have been organized by cities or directly by Roman state. In fact, large project, such as dams, *qanat*, aqueduct or channel, required substantial labour beyond the capabilities of villages. It can be suggested that these arduous and

⁶⁰⁷ Crouch 1975, 166.

⁶⁰⁸ Kamash 2009, 27-31.

⁶⁰⁹ Braemer *et alii*, 2010, 103-110.

often perilous works may have been undertaken by specialized civilians artisans, slaves or/and by soldiers, especially for those structures built in correspondence to the fort.⁶¹⁰ Unfortunately no direct evidences for the area under study are available but a good example of cooperation of inhabitants and soldiers is the work of canalization of the Oronte, near Antiochia, carried out under Vespasian.⁶¹¹ The Roman army possessed both the technological skills and the manpower to carry out such jobs efficiently; if necessary, it could coerce locals into assisting.⁶¹² However, military involvement does not mean that the project was intended solely for military purposes, and it may have been undertaken for public benefit or commissioned and paid by local authorities.

Investments were necessary not only at the time of the structure's construction. In fact, once the installations has been built, its continuous use depends, very largely, on its maintenance, i.e. rebuilding the water intakes, repairing the canals, dredging the reservoirs, preventing the silting of water access points etc. Clearly, the technical and social competence of a group, and its ability to strongly control the water resources have always been paramount.

4.3.1. The Harbaqa dam (SITE NR. 7 – Fig. 4.5)

ANCIENT NAME OF THE SITE: unknown

MODERN NAME OF THE SITE: Harbaqa or Kharbaqa,⁶¹³ al-Barde, An-Neknekiyye⁶¹⁴

LOCATION: 34°14'48.84"N 37°37'39.17"E = 34.2469N 38.072006E (around 70 km southwest of Palmyra)

ERA: Roman (?) Omayyad (?)

SURVEYS: A. Poidebard 1930;⁶¹⁵ D. Schlumberger 1936-1938; T. Bauzou late 1980s; Z. Kamash 2001-2004;⁶¹⁶ D. Genequand 2002; D. Morandi Bonacossi and M. Cremaschi 2008-2009

IMAGES:⁶¹⁷ from the Palmyrena Project website of the University of Bergen:

<http://www.hist.uib.no/antikk/dias/Syria/Kharbaqah/index.htm?0,0>

From the Italian Geoarchaeological Survey Project website:

⁶¹⁰ Kamash 2009, 71-72, 98.

⁶¹¹ *AE* 1983, 927. For the topic of soldiers employed in building activities see Pollard 2000, 242-250.

⁶¹² Cfr. Al-Karaimah 2012, 42.

⁶¹³ There is a tale, which explains the name of Harbaqa/Kharbaqa that means “the village that has been reversed”: God would have overturned the village because of the corruption that reigned among the population. The origin of the legend would be found in the ruined appearance of the gullies' walls cut by the mass of deposit sediment. When travelers saw these ruined walls thought it was a village destroyed due to corruption (Saliby 1990, 485, intervention Ch. Safadi). Similar Jabbur 1995, 53 and Bounni, Al-As'ad 1989, 127 who translated the toponym as “hard rock”.

⁶¹⁴ Crouch 1975, 171.

⁶¹⁵ Followed by a ground survey in autumn, Poidebard 1934, 187.

⁶¹⁶ Kamash 2009, 6.

⁶¹⁷ The amount of images available of the dam is huge. I am reporting here only the images available from the most recent surveys. Previous ones are stated above in the general references.

<http://users.unimi.it/palmyra/ricerche/harbaqa.html>

CORONA images 1105-1009Fore (Nov 4, 1968), 1107-1122Aft (Jul 31, 1969); Google Earth, Kamash 2009, Figg. 4.10-4.13, 4.15

REFERENCES: Bauzou 1989a, 318-322, Pl. 60-62;⁶¹⁸ Bounni, Al-As'ad 1989, 126-127; Calvet, Geyer 1992, 79-87, Figg. 41-45; Crouch 1975, 171; Genequand 2003a, 58-59; Genequand 2004b, 21- 23; Genequand 2006a, 66-68, Figg. 2-3; Geyer 2004; Kamash 2009, 56, 66-67, Figg. 4.10-4.13, 4.15; Kennedy, Riley 1990, 70-71, Fig. 17; Jabbur 1995, 52-54, Figg. 6-8; Lenoir 2011, 88-89; Matthews 1984, 162; Italian Geoarchaeological Survey Project website (<http://users.unimi.it/palmyra/ricerche/harbaqa.html>); Morris, Fan 1998, 31-32, Fig. 3.1; Meyer 2013; Meyer 2014 (forthcoming); Musil 1928, 97, 131-132; Poidebard 1934, 187-190, pl. XXXII-XXXIV; Saliby 1990, 476-479, Figg. 6-8; Schlumberger 1939a, 200-203, Pl. XXVII.1-2, Fig. 2; Schlumberger 1986; Schnitter 1994, 73-76, Fig. 69; Tate 1997, 62; Teixidor 1963, 35

Location

The Harbaqa dam is a gravity dam that controls all the water coming from the mountain area and the valleys to the south in the Palmyra Range, before the flow enters the northern plain of ad-Daw through the al-Barde's pass in Jebel Rawaq.⁶¹⁹ It is located half way between the forts at Qasr al-Heir al-Gharbi and al-Basiri (Fig. 4.7).

⁶¹⁸ Bauzou calls it al-Barde's dam because the *wadi* at its original starting point is called Wadi Bardi. See below.

⁶¹⁹ For the hydrology of the area see also the following paragraph al-Basiri.

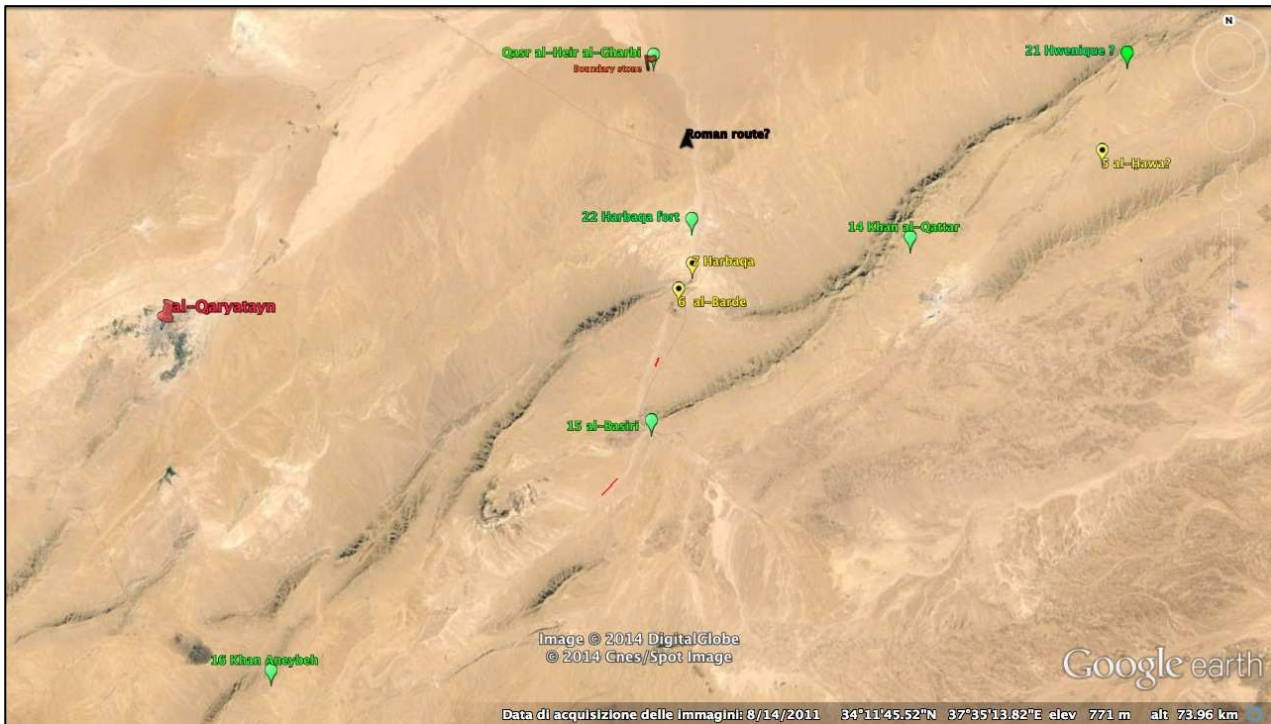


Fig. 4.7. Location of the Harbaqa barrage
(Image produced from Google Earth)

Together with the barrage south of Homs at the northern end of Lake Qatina,⁶²⁰ it is the largest and most impressive dam built in the Near East and the Mediterranean area before the industrial period. Its is still very well preserved thanks to the fact that it was not located in the area affected by the agricultural reorganizations of modern time. Moreover, unlike the Homs's dam,⁶²¹ it has not always been in use, and only since the 1960s, it was put back into operation.⁶²² The site was visited by Musil in 1912, by Poidebard in 1930 and investigated by Schlumberger between 1936 and 1938, who also excavated the Omayyad castle 16 km north of the dam, Qasr al-Heir al Gharbi.⁶²³ The ruins visible there, belong to a palatial structure built in A.D. 727 by the Caliph

⁶²⁰ The date of the dam has been debated, with suggestions ranging from the Bronze Age to Roman time (Calvet, Geyer 1992, 27-39; Schnitter 1994, 66; Morris, Fan 1998, 31) but recently Kamash suggested a Diocletian date based on Talmudic references and the style of construction (Kamash 2009, 69-70).

⁶²¹ The Homs' dam was built during the late Roman period, probably under Diocletian and it was the main source of water supply for Homs until the 1930s when a new dam was constructed. Even the new dam built by the French still uses the ancient dam as a support for its base, thus leading, contrary to widespread belief that the late Roman dam was destroyed, to the dam's remarkable state of preservation. As well as the emplacement of the French dam on the waterside of the Homs dam, the actual late Roman dam itself has undergone several less drastic changes. All along the course of the dam are the remains of rebuilds and repairs, mostly in the form of later supporting buttresses, but also later sluices and other design modifications, which show at least four phases of use and renovation (Kamash 2009, 65).

⁶²² Jabbur 1995, 53-54.

⁶²³ Genequand 2006a, 69-74. The hydraulic structure has been studied by Bauzou (1989a, 318-322), Calvet, Geyer (1992) and more recently by Genequand (2006a, 66-69), Kamash (2009) and the Italian Geoarcheological Survey of Prof. D. Morandi Bonacossi and M. Cremaschi.

Halicham Ibn Abd al-Malik, as attested by the inscription on the architrave door of the *khan*.⁶²⁴ Schlumberger recognised the Omayyad date of the palace and of most structures surrounding it, including the bath, the *khan*, the cistern, the aqueducts, the mill, the curved dam and the agricultural enclosure. He proposed that the pre-existing tower at the north-western corner of the palace was Byzantine and linked it to a monastery, no longer extant but mentioned in an inscription.⁶²⁵ He also proposed that two subterranean cisterns inside the palace were related to the Byzantine monuments. He attributed some carved stones and sculptures to an earlier Roman settlement, of which nothing else has survived *in situ*. According to Schlumberger the site was a Roman military post between the 4th and the 5th century A.D., a Byzantine monastery in 6th century and an Omayyad castle at the beginning of the Islamic time.

In his recent article, Genequand challenged the pre-Islamic date of both Qasr al-Heir al-Gharbi and the Harbaqa Dam.⁶²⁶ After an accurate analysis of Schlumberger's studies, Genequand concluded that all the archaeological findings dated to the Roman period such as funerary sculptures, architectural elements and cut stones, should be considered as not *in situ* but brought there later, perhaps from al-Qaryatayn, Hawwarin or Palmyra itself, for the construction of the Islamic castle. Therefore, in conclusion, according to the scholar, there would not be any evidences of a Roman period for the site.⁶²⁷

Construction technique (Fig. 4.5)

In order to establish its construction technique, the systematic study carried out in the Thirties by Schlumberger is fundamental because he was able to study it before the dam was repaired, i.e. before that the breach was filled.⁶²⁸

The structure, a gravity dam, is 345 m long and 21 m high,⁶²⁹ with a width of 18 m at its base in the *wadi* bed, and about six metres on the top, easily wide enough for the passage of two cars.⁶³⁰

The construction technique is pretty simple: It was built with a rubble core between two faces of large ashlar blocks of hard yellow local limestone. Numerous blocks of the facings are now lost but the entire structure appears to be still very resistant, presenting only few localized breaks or

⁶²⁴ *RCEA* I, 23, nr. 27.

⁶²⁵ Schlumberger 1939a, 1986, 26-28; *IGLS* V ,240-243; Genequand 2006a, 69-70 (it was probably a Monophysite monastery).

⁶²⁶ For the Harbaqa dam see below. Genequand 2006a.

⁶²⁷ This is the reason why the site, even if it is located within the area of my study, has not being included in the sites' survey of chap. 3. 1.

⁶²⁸ Schlumberger 1939, 200-203; 1986, 2-3.

⁶²⁹ These dimensions are those recovered most recently by Prof. Morandi Bonacossi and Cremaschi (<http://users.unimi.it/palmyra/ricerche/harbaqa.html> - consulted 20.09.2013). Schlumberger 1939a, 200 n. 3; Calvet, Geyer 1992, 81 and Schnitter 1994, 75 state 365 m of length.

⁶³⁰ Jabbur 1995, 52. See also <http://www.panoramio.com/photo/13394608> (consulted 15.08.2013).

cracks. Terraces, varying in length, separated by masonry blocks, form buttresses of the dam downstream. They are placed every 4 m along the corridor (around 6.3 m wide), which on top of the dam serves as a passage.⁶³¹ Stepping was only provided for the lowest courses of the dam.⁶³²

Before the restoration of the last century, the dam presented three outlets, two at the ground level and one about half way up the dam.⁶³³ Already at the time of Schlumberger's study two external ones (at the ground level) were in very poor condition. However, similar canalization structures demonstrated that they were coeval to the barrage itself. Unfortunately, today, due to the modern reparation, they are not visible anymore.

The water catchment outlet, situated in the middle of the structure, is located upstream, at 11 m under the top. It consists on a terracotta canalization that leads to an underground channel. The beginning of this canalization lies on a buttress, against which an Omayyad watching tower is placed.⁶³⁴ A system of openings regulated water access in the canalization that emerged downstream around 4 m below the ground level. It is not possible to establish where the junction was placed since at this point the masonry has been completely eroded. However, all scholars agree to date it to the same period of the watching tower, i.e. 7th - 8th century A.D. Bauzou proposed to consider the entire central body (outlet with its water catchment + tower) a rebuilt following a break in that point.⁶³⁵ We can add to these three outlets another spill located on the top of the dam and observed by Poidebard.⁶³⁶ It was probably used, once the reservoir was filled up, to throw the water in surplus again in the normal *wadi* course.⁶³⁷

Condition of the dam (Fig. 4.5)

The Harbaqa Dam and its heavily sedimented reservoir is an example of the relative permanence of sediment deposits upstream of a dam. Although the dam was breached centuries ago, the gullies that traverse the deposits have removed only a fraction of the total sediment deposits. Therefore, despite centuries of erosion, most of the sediment still remains trapped upstream of the dam.⁶³⁸

This because waters that collected there, due to their season torrential flow, were rich in sediments leading to fill up quickly the artificial lake.⁶³⁹

⁶³¹ Calvet, Geyer 1992, Fig. 44.

⁶³² Kamash 2009, 64, Fig. 4.10

⁶³³ Schlumberger 1986, Pl. 3.

⁶³⁴ A later dating for it is provided by the fact that the construction technique is different from the dam itself. Calvet, Geyer 1992, 83.

⁶³⁵ Bauzou 1989a, 319, 322.

⁶³⁶ Poidebard 1934, 189.

⁶³⁷ Calvet, Geyer 1992, 84.

⁶³⁸ Morris, Fan 1998, 31-32.

⁶³⁹ Calvet, Geyer 1992, 84-86.

An analysis of the sediment process was firstly attempted by Bauzou, who consequently recognized 6 stages of evolution.⁶⁴⁰

- Stage 1: construction of the dam. At that point also the terrace created by the dam could be cultivated. However, the artificial basin started immediately and progressively to be filled up;
- Stage 2: break of the structure. It was then not possible to cultivate downstream but only inside the reservoir thanks to fertile sediments;⁶⁴¹
- Stage 3 (during 8th century A.D.): reparation and reuse of the system in connection with the hydraulic systems of Qasr al-Heir al-Gharbi. Unfortunately, again, the lake started soon to be filled up with sediments, this time up to the top of the barrage wall;
- Stage 4: cultivation only of the alluvial terrace created by the dam;
- Stage 5: new break of the dam. At some point in the middle of the terrace a small canyon “d’erosion régressive” developed;
- Stage 6 (1960s): small scale reparation carried out by the actual landowner,⁶⁴² that closed the breach in the dam recreating a small artificial basin in order to be able to cultivate again.⁶⁴³

With the same goal, researches by the Italian geoarchaeological project, coordinated by Prof. D. Morandi Bonacossi (University of Udine) and Prof. M. Cremaschi (University of Milan), have been carried out during 2008 and 2009 missions.⁶⁴⁴ At that time, the reservoir created by the dam, as in the images of the last century, was completely filled with silted sediment cut by deep river incisions as a result of a breach in the dam.⁶⁴⁵ Recently, the gap was closed with consequent filling of the incisions. If the upstream filling of the dam is not accessible nowadays, the downstream deposits engraved by the *wadi*'s course have been exposed for hundreds meters in beautiful sections more than two meters high.⁶⁴⁶ The gravels at the base of the sections represent the activity of the *wadi* before the construction of the dam, in a much more water-rich environment than today. Silts, about 1 m thick in the central part of the sections, were instead related to a minor watercourse ascribable at the time of the use of the dam. Clasts' deposits on the top are to be connected with the abandonment of the structure. Within the deposits, fireplaces have been found which reflect a sporadic presence on the site. Inside the mortar that cements the blocks of the dam itself, particularly rich in ash, were found numerous coals. These elements can lead to accurate dating the construction of the building, its lifetime and degradation.

⁶⁴⁰ Bauzou 1989a, 319-320, 322.

⁶⁴¹ See stage 6 for references.

⁶⁴² Amīr Nāyif al-Sha‘lān, the grandson of Amīr Nūrī al-Sha‘lān (Jabbur 1995, 53).

⁶⁴³ Jabbur 1995, 53-54, Fig.8.

⁶⁴⁴ <http://users.unimi.it/palmyra/ricerche/harbaqa.html>.

⁶⁴⁵ Morris, Fan, 1998, 31 and Jabbur 1995, 53.

⁶⁴⁶ See for an example Jabbur 1995, Fig. 7.

Chronology

Schlumberger dated the dam to the Roman period, later reused and maintained by the Omayyads.⁶⁴⁷ This dating was based on the material used, hard limestone instead of soft local one, and the construction technique, which he compared with the funerary towers in Palmyra.⁶⁴⁸ He also distinguished between two phases with two outlets from the Roman period at the ground level and a third outlet at a higher level from the Omayyad period.⁶⁴⁹ Musil observed some blocks with carved ornaments like those in Palmyra, and several architectural fragments, half columns and various ornaments below the dam,⁶⁵⁰ but Schlumberger was not able to identify them.⁶⁵¹ Later Jabbur, who was born in the small town of al-Qaryatayn close to Harbaqa, and was professor in Arabic literature and Semitic studies at the American University in Beirut, visited the site. It was still possible to get down into the fissured landscape behind the dam before the outlet was closed with concrete in the 1960s and the reservoir behind filled up with silt.⁶⁵² He noticed an inscription from the Roman period at the bottom, unfortunately without giving any details.⁶⁵³

Almost all scholars have accepted Schlumberger's dating to the Roman period, until recently. An exception was the Syrian archaeologist Safadi who in 1987 suggested a dating to the Omayyad period.⁶⁵⁴ Admittedly, the actual dating evidence for the Harbaqa dam is meagre. There is no reason to doubt the observations of Musil or Jabbur but both the architectural fragments, if they are correctly dated by Musil, and the block with the inscription may have been reused from former buildings at the construction of the dam.

Recently Genequand has argued strongly for an Omayyad date.⁶⁵⁵ He compares the construction technique with similar Omayyad dams in Jordan. He does not deny the existence of two phases regarding the outlets, but date them both to the Omayyad period, as a response to heavy silting. He points out that the only site in the area from the Roman period is a medium sized fort 3 km north of the dam, i.e. the Harbaqa fort,⁶⁵⁶ and that this fort and the surrounding settlement did not need such a large construction. They would also have lacked the financial and human resources to initiate a project of this size, whereas the Omayyads had both the means and the ability to mobilise manpower. According to Genequand, the position of the dam only makes sense in connection with

⁶⁴⁷ Schlumberger 1939 and 1986. Already Poidebard (1934, 191) admitted that it might have been used also in early Islamic period.

⁶⁴⁸ Schlumberger 1986, 25; Calvet, Geyer 1992, 81.

⁶⁴⁹ Schlumberger 1939a, 202-203.

⁶⁵⁰ Musil 1928, 131.

⁶⁵¹ Schlumberger, 1986, 3 n. 22.

⁶⁵² Stage 6, see above.

⁶⁵³ Jabbur 1995, 53. The date of Jabbur's visit is uncertain.

⁶⁵⁴ Saliby 1990, 485.

⁶⁵⁵ Genequand 2004b, 21-22; Genequand 2006a, 66-69.

⁶⁵⁶ See site sheet chap. 3.

the site of Qasr al-Heir al Gharbi as an integrated part of the water system of the castle and the attached garden 2 km to the northwest. They all together appear as “an extensive single planned operation”.⁶⁵⁷

In fact, the water collected in the reservoir, went out through the central outlet, and, through an underground channel (north-south direction parallel to the *talweg*),⁶⁵⁸ arrived in the cultivated area, distant about 18 km from the dam. Schlumberger provided a plan of the various hydraulic system and structures found connected with the site of Qasr a-Heir al-Gharbi:⁶⁵⁹

- one channel, partly underground, 16.5 km long;
- 14.8 km downstream of the dam, a derivation channel brought water to the castle and a bath located further east;
- at end of this first segment of the channel, an open cistern (*birket*), collected part of the water. It has square structure (60 m on each side), 3.65 m deep, with a capacity of 13,000 m³. The channel continued downstream after the *birket*, and around 1 km after, a secondary channel started from the right bank of it. The flow was used to produce motive power for a mill, located there. The water used by the mill flowed again into the channel further downstream;
- just before the end, the channel again became underground until it reached a garden, where, through multiple derivation channels, the water was spread. The large garden is approximately 46 ha surrounded by a rectangular wall of 1,050 m x 442 m;
- immediately upstream of the garden, on the *wadi* itself, there was a second semicircular barrage that formed a small catchment area.⁶⁶⁰

Genequand noted that there are no other structures of this kind in the Palmyrene territory. According to him, it was the building of the castle, as part of a larger Omayyad project, that determined the position of the dam, not the other way round.

The use of the construction technique, as basis for the chronology of the dam can no longer be maintained, as noted by Genequand,⁶⁶¹ but also a re-dating is problematic for several reasons, as pointed out recently by Meyer.⁶⁶²

Firstly, the capacity of the reservoir is about 5,000,000 m³, enough to irrigate fields with barley covering at least 5,000 ha.⁶⁶³ The Omayyad garden at Qasr al-Heir al-Gharbi only covers about

⁶⁵⁷ Genequand 2006a, 67.

⁶⁵⁸ See above construction technique.

⁶⁵⁹ Schlumberger 1986, Pl.1

⁶⁶⁰ For a more detailed description of Qasr al-Heir al-Gharbi water supply system see Schlumberger 1939a, 1986; Calvet, Geyer 1992, 86-92 and Genequand 2006a, 64-65.

⁶⁶¹ See also Kamash 2009, 66.

⁶⁶² Meyer 2014 (forthcoming).

⁶⁶³ Geyer 2004, 298; Calvet, Geyer 1992, 86; Meyer 2013, 270 n.2.

46.5 ha.⁶⁶⁴ Of course, there may have been other gardens in the area, but there are no indications that they should have been of the size of those at the much larger Omayyad castle complex at Qasr al-Heir al-Sharqi, 100 km northeast of Palmyra. Here a long aqueduct brought water from the springs at al-Qawm and Umm al-Tlal 25 km northwest of the castle feeding large enclosed areas measuring at least 1,000 ha.⁶⁶⁵ Even if supposing that the Harbaqa dam and the amount of water it controls was connected with the Omayyad site of Qasr al-Heir al-Gharbi, it greatly surpasses the needs of the castle and gardens, leading to the same paradox as with the Roman dating in relation to the small Roman fort.

Could it not have been the other way around, i.e. because the dam was there then the fort was constructed too with the aim of controlling this important resource and probably also the road running nearby? In fact, the fort itself dates to the same period of the supposed Roman construction of the barrage, i.e. end of 1st - beginning 2nd century A.D., as confirmed by Genequand himself.⁶⁶⁶

On the other hand Genequand stresses that many of the Omayyad building programs in remote areas show the ability to mobilise manpower and initiate large costly projects in very short time, but of poor quality of workmanship and that they very frequently display “a certain incongruence between their purpose and the magnificent way in which they were realised”.⁶⁶⁷ However, pictures of the inner side of the wall do not seem to show a poor quality of workmanship,⁶⁶⁸ and the engineers imported hard limestone instead of using the soft local stone.

Moreover, the two phases, proposed by Schlumberger, are not only a question of outlets in different levels. The downstream side of the dam has been heavily eroded, and is difficult to decide if there have been several phases. The upstream side of the wall is well preserved and old pictures show that the lower courses of blocks are thinner than the upper.⁶⁶⁹ This may indicate two chronological phases or at least two different stages in the construction. However, the erosion of the downstream side has exposed the rubble core of the dam.

Kamash, as part of PhD thesis at the University of Oxford, has made a study of the core and done some extremely important observations. According to her opinion, there is a clear difference in the composition of the rubble in the lower courses compared to the upper courses, and also in the

⁶⁶⁴ Schlumberger 1939a, 205-207.

⁶⁶⁵ Genequand 2008, 268.

⁶⁶⁶ Genequand 2004a, 22.

⁶⁶⁷ Genequand 2006a, 69.

⁶⁶⁸ Denise, Nordiguian 2004, Pl. 268; Kamash 2009, Fig. 4.10; Jabbur 1995, 57, Fig. 6; Meyer 2014 (forthcoming).

⁶⁶⁹ Denise, Nordiguian 2004, Pl. 268; Kamash 2009, Fig. 4.10; Musil 1928, 132, Fig. 31.

mortar used to bond the ashlar.⁶⁷⁰ She therefore suggested that the dam, as we see it nowadays, cannot have been a result of a single planned operation. There must have been two clearly chronologically separated phases in the dam: built in Roman period, its height was increased in the Omayyad period, so the original structure would have been substantially lower, *c.* 10 m high.⁶⁷¹ Analyses of the numerous coals found inside the mortar were planned as one of the goals of the Italian geoarchaeological survey. They could not be accomplished due to a forced stop of the project. Therefore, without being able to finally establish an absolute chronology of construction, use and degradation of the dam, the problem is still an open issue.

Function

Some scholars see the dam as part of a larger agricultural landscape in the Palmyrene region with a permanent occupation in the area.⁶⁷² Others have suggested that the dam was at a road station between Palmyra and Damascus connected with the caravan trade,⁶⁷³ or a propaganda project designed to demonstrate the power of the Roman Empire and to impress the nomadic tribes.⁶⁷⁴

Genequand considers that it was built only in order to supply water for Qasr al-Heir al-Gharbi, both for drinking purposes (castle, *khan*), for civic purposes (bath) and irrigation purposes (garden and surrounding fields).⁶⁷⁵ Recently, Meyer, who together with Kamash still strongly defends the “romanity” of the dam, proposed to consider it as a rational and huge economic investment in agricultural exploitation of the area. This in order to meet a high requirement in food supply as would have been that of Palmyra between the end of the 1st and the end of 3th century A.D.⁶⁷⁶

Conclusion

Leaving aside the problem of dating the construction we can still make some general statements, valid independently of the chronology and to which almost all scholars agree:

1- Best location.

It has been said that the location of the Harbaqa dam was one of its failures because it was prone to silting.⁶⁷⁷ However, it seems that two factors argue against this idea. Firstly, all dams by their

⁶⁷⁰ Kamash 2009, 66: «The rubble core of the lower part of the dam, however, used cobbles from the *wadi* bed, whereas the rubble core of the upper part of the dam comprised local limestone gathered from the surrounding area, but not from the wadi. In addition, the lower courses of ashlar were bonded with a pinkish/purplish grey mortar with a high ash and crushed terracotta content. The upper courses, on the other hand, were bonded with a lighter mortar».

⁶⁷¹ Kamash 2009, 63.

⁶⁷² Teixidor, 1984, 71; Kamash 2009, 64.

⁶⁷³ Kennedy, Riley 1990, 70-71; Butcher 2003, 163; Yon 2002, 129-130.

⁶⁷⁴ Geyer 2004, 299.

⁶⁷⁵ Genequand 2006a, 67-69.

⁶⁷⁶ Meyer 2014 (forthcoming). I will go back to this topic on chap. 4.4.4.

⁶⁷⁷ Calvet, Geyer 1992, 126

very nature are prone to silting because the action of the dam against the water movement means that particles carried by the water settle out.⁶⁷⁸ Secondly, the dam is naturally located in a good position: its reservoir is fed not only by the Wadi al-Barde, but also by other large *wadis* that flow into al-Barde a few hundred metres further up. In addition, the ring of mountains that almost entirely encircle the area around the dam must also contribute large quantities of runoff water. Moreover, the catchment area behind the dam is huge, covering 600 km². There are only few places in the Palmyrene territory that are suitable for such large hydraulic project as the Wadi Abyad basin, north of Palmyra, where a dam was constructed in the second half of the 20th century to water fields at the plain of Sahl Feïf el Mazraâ to the southwest.⁶⁷⁹

This important feature was already understood by one of its first explorer, Poidebard. He saw in this hydraulic system a wise agricultural organization planned and based on the natural resources of a steppe particularly favourable to agro-pastoral economy exploitation.⁶⁸⁰

To conclude, everything indicates that the Omayyads choose the site for their castle with gardens, either because it was close to an excellent place to build a dam, or because an old Roman dam, if repaired, could give them easy and abundant access to water.

2- Strong central power.

In order to built such a massive structure, it was necessary a strong power able to finance, to organize and coordinate its realization, both in terms of manpower and engineering skills, and to maintain it in use. As stated above, since dams silt easily, it would have needed more or less continuous cleaning, not necessarily every year, to keep the outlets fully functional. It could have been done by emptying the reservoir in the later part of the hot season, when the water level was low, or by opening all outlets at longer intervals to wash away the silt, when the torrential streams were at their strongest during the rainy season. Apparently, considering all the reparation made already in Antiquity, neither the Romans nor the Omayyad would have been able to accomplish the last one.

To conclude, without further archaeological data available, the Harbaqa dam *querelle* still remains an open issue. It is possible only to state that whoever constructed the dam aimed to greatly increase the agricultural productivity of the area also providing water for travelers, traders and their animals.

⁶⁷⁸ Morris, Fan 1998, 31-32. Cfr. also Kamash 2009, 64.

⁶⁷⁹ This dam had a capacity of 5,000,000 m³ in 1988, but now it has been reduced to about 1,250,000 because of silt. Meyer 2014 (forthcoming).

⁶⁸⁰ Poidebard 1934, 189-191; Geyer 2004, 298-299.

4.3.2. Forts' water management

Harbaqa fort (SITE NR. 22) (Fig. 4.8)

No specific hydraulic systems have been recovered there during the surveys. Perhaps, the nearby dam provided enough water supply. However, in the aerial photos and in Poidebard's plans a *qanat*, that started northeast of the "village", followed the *wadi* stream for around 450 m, crossed it and reappeared on the left side, is visible.⁶⁸¹ Bauzou hypothesized that it could have been the subterranean part of the Omayyad channel that brought water from the dam to Qasr al-Heir al-Gharbi's gardens.⁶⁸²

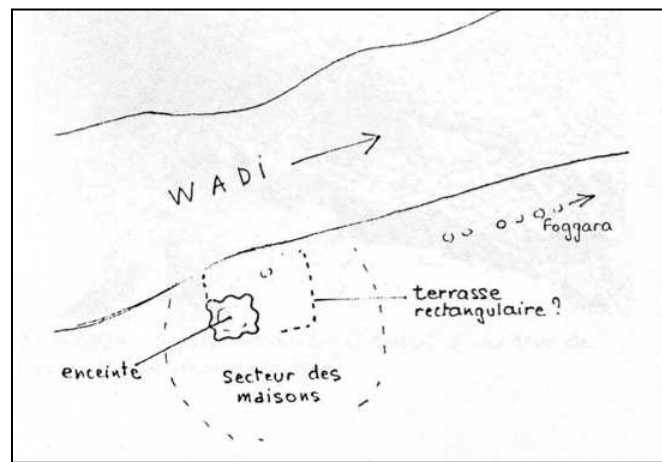


Fig. 4.8. Harbaqa's fort water supplies.
(Bauzou 1989a, Pl. 63)

Khan al-Abyad (SITE NR. 11)

The only water catching system device surveyed is a well, now filled with debris, found in the middle of the fort in what seems a free space but probably at that time, was located between two internal structures.⁶⁸³

Khan al-Hallabat (SITE NR. 13)

The water supply of the site was guaranteed by the presence of many wells: one located in the southwest angle tower and three outside the walls.⁶⁸⁴ In any case, the *wadi* that flowed therein, as showed by aerial photos, probably guaranteed enough water supply.⁶⁸⁵

⁶⁸¹ Poidebard 1934, Pl. XXXII.

⁶⁸² Bauzou 1989a, 325.

⁶⁸³ Bauzou 1989a, 331; Gregory 1995-1997: 1996, 200; Lenoir 2011, 83.

⁶⁸⁴ Two of outside ones, were square with stone facings. Poidebard 1934, 49; Gregory 1995-1997: 1996, 202.

⁶⁸⁵ Kennedy, Riley 1990, 203, Fig. 151 (reproducing Poidebard 1934, Pl. XL).

Khan al-Qattar (SITE NR. 14) (Fig. 4.9)

Outside, S-E, the fortification wall there is a square *birket* (15 x 15 m) well preserved. It was reachable by a staircase arranged in a recess of the wall. Water was supplied by a derivation channel⁶⁸⁶ from the dam built in the *wadi* flowing S-W of the fort.⁶⁸⁷ This is the same hydraulic system adopted at Khan al-Manquora, but since the dimensions of the two forts are quite different (Khan al-Qattar ¼ of it), the amount of water supply required was different too. In fact, at Khan al-Qattar the structures are less substantial and complex.

Because probably its bad preservation did not attract interest before, Bauzou first surveyed the whole water system complex only in the 1980s. By that time, the dam has been taken away by the rises of the *wadi*. The only elements still *in situ* are: on the right bank a highly eroded remains of a masonry about 5 m wide, made of irregular blocks embedded in a mortar. On the other bank, a little downstream, in the *wadi*'s bed but at channel's height, the apron that was used as foundation is still visible.

Considering these remains, Calvet and Geyer proposed that the original structure was that of a gravity dam: a filling between two facings (now disappeared). The dam, crooked compared to the *wadi* axis, was directly related to the derivation channel located on the left bank, which was supported by a stonewall with no trace of mortar. The channel led to a basin located N-W of the *birket*, that was used probably to settling the water.⁶⁸⁸ The *birket* was probably also fed by surface runoff drains coming from the natural slope where the fort is located since the southern side of the cistern included two sluices leading to an underground channel now filled with debris.⁶⁸⁹

Calvet and Geyer suggested that the derivation channel from the dam was planned later, maybe because the runoff drains were not enough.⁶⁹⁰ Furthermore, they hypothesized that the second stage has to be connected to the fort's construction in Late Antiquity (Diocletian?), while the first one, was before 3rd century A.D.⁶⁹¹

⁶⁸⁶ Not surveyed by Poidebard (1934, Pl. XXXIX). He noticed only the *birket* and a well (or «birké»). He stated that the first one was made of the same masonry type of the fort.

⁶⁸⁷ Bauzou 1989a, 336-327; Calvet, Geyer 1992, 100-105, Figg. 56-59; Gregory 1995-1997: 1996: 207; Kamash 2009, 71-72; Lenoir 2011, 87; Poidebard 1934, 48, Pl. XXXIX.

⁶⁸⁸ Idem.

⁶⁸⁹ Bauzou 1989a, 327.

⁶⁹⁰ Calvet, Geyer 1992, 104. Poidebard (1934, Pl. XXXIX) confused in his plan the drainage channel with the *wadi*.

⁶⁹¹ Therefore before the monumentalization of the road from Palmyra to Damascus south of the Jebel Rawaq.

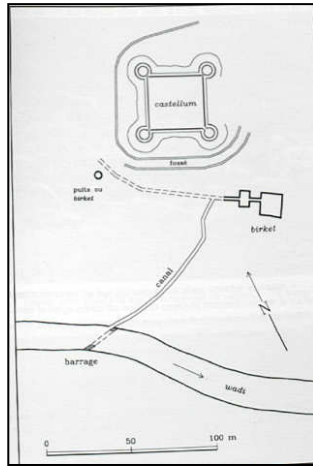


Fig. 4.9. Khan al-Qattar's water management.
(Calvet, Geyer 1992, Fig. 56)

Al-Basiri (SITE NR. 15)

As already stated in chapter 3, the actual remains of the fort are in very bad condition. Therefore an analysis of the water management is very sketchy. Another problem is that the standing remains have also to be ascribed not to the Roman period but to the Omayyad's one. There seems to be two wells and one *birket* inside the fort,⁶⁹² and outside the ramparts (200-300 m south and east) few wells are still in use.⁶⁹³

However, it is possible to assert, with confidence, that the area where the site is located is naturally very rich on water. In fact, many *wadis* coming from the higher mountains south and east of al-Basiri gathered there. Then, following the natural slope of the terrain, they narrow to cross the Jebel Basiri's pass. From this point, the waters form the large Wadi Barde that runs N/N-E until a second pass separating the Jebel Barde and the Jebel Zaraq Khalil (altitude of the pass 700 m).⁶⁹⁴ The *wadi* is then called Wadi Harbaqa and opens into a steppe lightly sloping northward, where the site of Qasr al-Heir al-Gharbi is located. Therefore, the hydrographic systems of the sites located in the area are strictly connected, as showed in Bauzou's plates reported in the previous paragraph.⁶⁹⁵

Two *qanawat* have been recovered from Google Earth (Fig. 4.10): one south of al-Basiri, that followed in a west direction the Wadi Basiri's bed and fed the *birket* surveyed in the fort.⁶⁹⁶ A second one, the "Great foggara",⁶⁹⁷ around 7 km long, runs along the Wadi Barde, after the Jebel

⁶⁹² One well and the *birket* inside the smaller enclosure, while the second well within the larger enclosure.

⁶⁹³ Bauzou 1989a, 317-318.

⁶⁹⁴ Between the two Jebels are located the sites of al-Barde, the Harbaqa dam and the Harbaqa fort.

⁶⁹⁵ Bauzou 1989a, Pl. 61-62.

⁶⁹⁶ Bauzou 1989a, 318. However in Bauzou's plan (Pl. 59) is report east of the *wadi*.

⁶⁹⁷ *Foggara* is the term used by Bauzou but it's not correct: *foggara* is used in Africa while *qanat* for Middle East. Kamash (2009, Gazetteer 7), referring to Musil, defines it (it is not clear which one) as rural aqueduct, not as a *qanat*.

Basiri's pass and the alluvial plain.⁶⁹⁸ Recorded by Musil⁶⁹⁹ and by Poidebard,⁷⁰⁰ it was no longer visible in the 1980s. Since it appears to be an alternative water catching system to the dam to irrigate, Bauzou suggested for its construction both a Late Roman/early Omayyad date, or more later, when the Harbaqa dam was damaged.⁷⁰¹

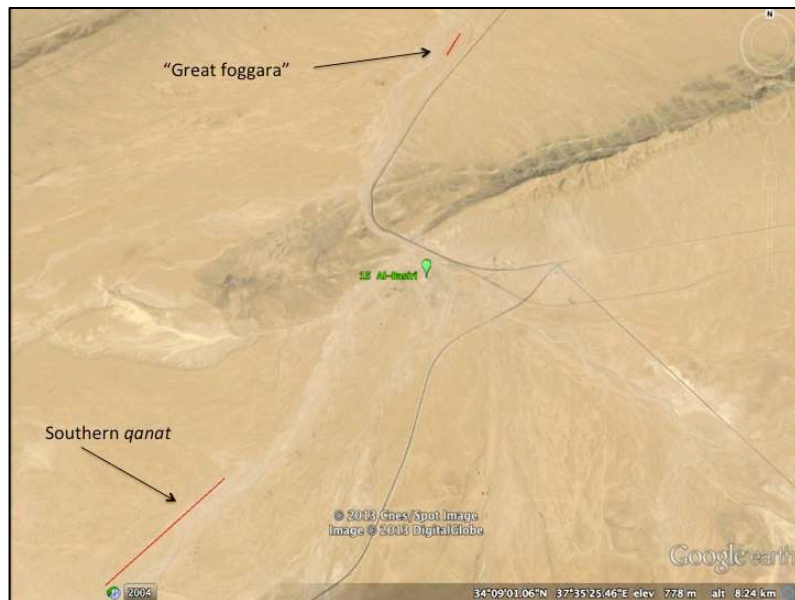


Fig. 4.10. The *qanawat* of al-Basiri
(Image produced from Google Earth)

Khan Aneybeh (SITE NR. 16) (Fig. 4.11)

The water supply for the fort was guaranteed by two open reservoirs (*birket*) just beyond the north wall.⁷⁰² One, rectangular, measured 11.80 x 34.50 m and was divided in two unequal basins. The smaller one was probably used for settling the water. The second reservoir (11.60 x 12.60 m) extended northward through a derivation channel 20.80 m long. The sides of these two structures are similar to that of the fort's ramparts: small limestone blocks.

Moreover, another covered *birket*, guarded by a tower, was located at 300 m south of the fort⁷⁰³ and one well in the southern inside part of the wall.⁷⁰⁴

⁶⁹⁸ The "Great Qanat" is also slightly visible from CORONA image (1107- 1122Aft, July 31, 1969).

⁶⁹⁹ Musil 1928, 128: «Running down to the valley is a subterranean aqueduct coming from a large artificial reservoir (Harbaqa dam) ...».

⁷⁰⁰ Poidebard 1934, 188.

⁷⁰¹ Bauzou 1989a, 320-321.

⁷⁰² According to Musil (1928, 105, Fig. 27) an opening in the north wall gave an easier and more direct access to the outside *birkets*.

⁷⁰³ Mentioned only by Poidebard 1934, 47 and Lenoir 2011, 90.

⁷⁰⁴ Mentioned only by Lenoir 2011, 90, Fig. 43.

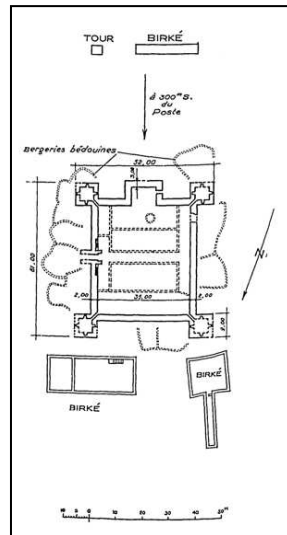


Fig. 4.11. Water supply of Khan Aneybeh.
(Lenoir 2011, Fig. 44)

Khan al-Manquora (SITE NR. 17) (Fig. 4.12)

The fort lies at the centre of an elaborate system of water collection consisting of two dams and at least three opens cisterns (*birkets*), all connected each other. The entire system was surveyed by Bauzou in 1980s on the basis of Poidebard's work and resumed by Calvet and Geyer.⁷⁰⁵

The site is located in a strategic geographical point: 500 m north of the fort, the limestone summit has been eroded creating a breach. During the rainy season, the water coming from the mountains beyond, gathered there. The breach is quite narrow to construct a dam: upstream of an ancient diversion dam, there is, nowadays, a reservoir dam that through a channel aliments a water point used by Bedouins.

The ancient dam wall, still installed directly on the bedrock, measures 19 m of length and 3 m of thickness.⁷⁰⁶ It is made of limestone blocks, roughly cut and arranged irregularly and linked by hydraulic concrete without shingle. Some blocks are used to reinforce the whole structure. The maximum height preserved of the dam reaches 1.5 m and it seems to be quite close to the original one.⁷⁰⁷ On the left extremity there is an open channel in the rock that, through an outlet 0.7 m wide, let to resend water along the *wadi*.

Close to the ancient dam the remains of an elongated structure are still visible.⁷⁰⁸ It was probably a covered cistern (*birket*)⁷⁰⁹ created in order to collect overflow waters to guarantee a

⁷⁰⁵ Bauzou 1989a, 304-308; Poidebard 1934, 45-46; Calvet, Geyer 1992, 94-100. See also Lenoir 2011, 92; Kamash 2002, Gazetteer 7, 9.4; Kennedy, Riley 1990, 182; Musil 1928, 31-32.

⁷⁰⁶ At least ¼ of it has been damaged by the new dam. Calvet, Geyer 1992, 95 n.3.

⁷⁰⁷ Calvet, Geyer 1992, 98.

⁷⁰⁸ Poidebard (1934, 46, 183), who was able to measure the structure before that the modern dam partially destroyed it, stated 63 x 6.60 m.

complementary water stock in case the two cisterns located downstream would have been insufficient. The latter ones were alimented directly by *wadi* derivation channels. In fact, from the dam, water was channelized, firstly through a drainage channel in a rocky promontory, then through a simple aqueduct,⁷¹⁰ and a channel flanked by an embankment until the first cistern (73.20 x 42 m) located 20 m near the southwest tower of the fort. This *birket* is divided in two basins: the northern (29.20 x 42 m), now filled with sediments, was used to settle the water. It is separated from the southern one by masonry blocks 2 m thick, regularly arranged, spaced, probably, by opening that let the two basins to communicate. The second (southern) basin was squared: 42 x 42 m. Its southern side was pierced by 3 openings that drained water into a channel flowing into another *birket* (29.50 x 29.50 m) located *c.* 300 m south of the southeastern tower of the fort. A diversion channel from a second dam alimented also this cistern. In the north side of the cistern, reinforcement 3.80 m large and 5.20 m deep, included a stone staircase that let to go down to draw water.

As stated above, not all the *wadi* water was captured by the first dam. Around 600 m south of the upstream one, there is a second dam, very bad preserved. It seems to show two different stages of construction: one corresponding to a dam 2.2 m large that probably after being damaged was enlarged up to 7 m. The older structure was composed of irregular limestone blocks while the newer by smaller and more regular blocks. The dam was probably not very high because the aim was not to create a reservoir to collect water but to distribute it through the derivation channel.⁷¹¹

Finally, near the fort, 45 m east of the northeast corner tower a cistern (6.5 x 3 m) was buried. It was delimited by a masonry wall and covered by stoned vault, bound by a mortar. No adduction system is visible but it was probably used to stock water.

Calvet and Geyer consider the water catching structures as part of a unitary and coeval system related with the fort construction at the end of the 3rd century A.D.⁷¹² while Bauzou suggested that the covered cistern close to the upstream dam belonged to a earlier chronological stage linked with the road recovered north of the fort that, going north-eastward, through the mountain pass, connected Khan al-Manquora with al-Qaryatayn and then Emesa.⁷¹³

⁷⁰⁹ Musil 1928, Poideabard 1934, Bauzou 1989a, Calvet, Geyer 1992. This hypothesis was formulated because of the presence, along the long side, of rectangular cavities intended to receive roof beams.

⁷¹⁰ At the foot of this aqueduct an eroded milestone date to Constantine the Great (A.D. 324-326) and mentioning the ancient name of the city (but not the distances) has been recovered (Bauzou 1989a, 306, nr. 43).

⁷¹¹ Calvet, Geyer 1992, 98.

⁷¹² Calvet, Geyer 1992, 99-100.

⁷¹³ Bauzou 1989a, 310-313.

The reservoirs' total surface was around 4,300 m². We do not know the exact depth but Lenoir hypothesized that the total capacity was not lower than 10,000 m³ or 1,000,000 liters of water.⁷¹⁴

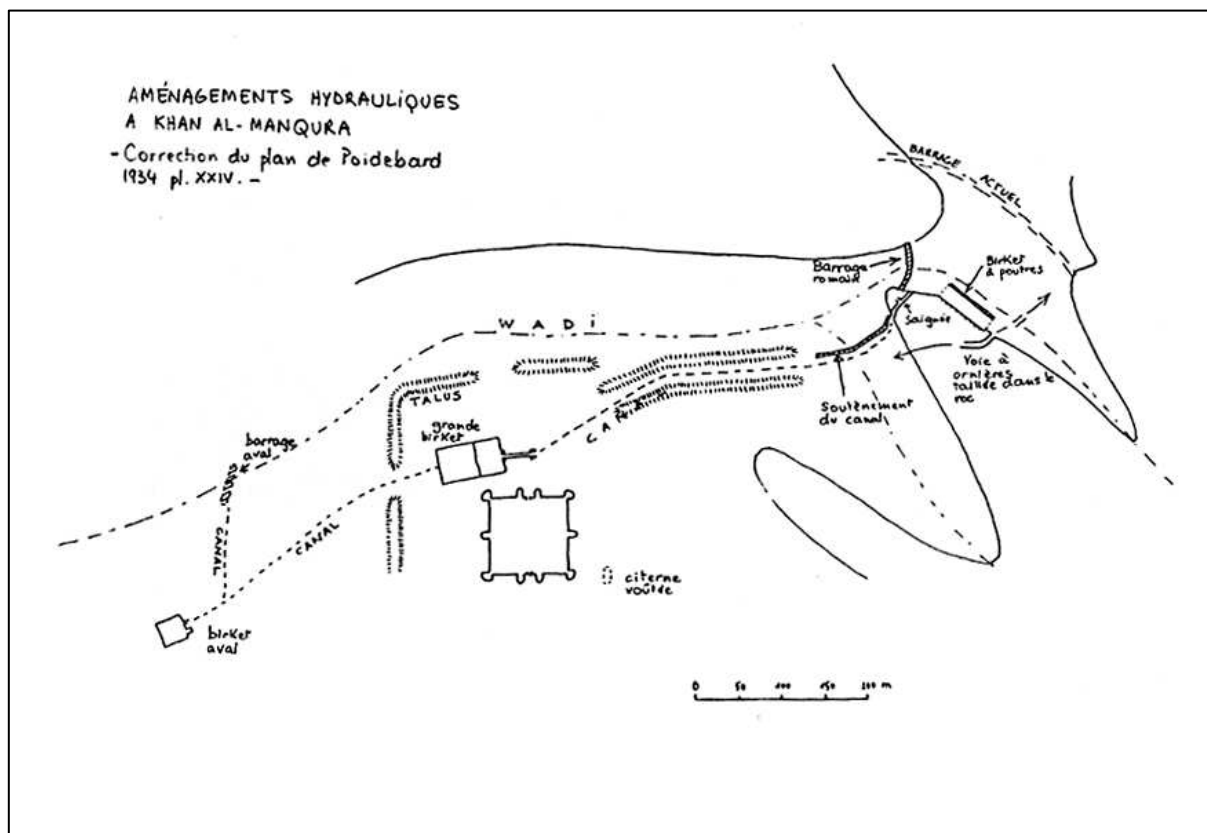


Fig. 4.12. Khan al-Manquora's hydraulic system.
(Bauzou 1989a, Pl. 55)

Al-Hamra (SITE NR. 20)

The hydraulic systems present in the site are an open cistern (*birket*) and ancient (?) wells,⁷¹⁵ watered according to Burton by Bir el Kharázi.⁷¹⁶

Khan al-Trab (SITE NR. 18) (Fig. 4.13)

The water supply was guaranteed by a *birket* (c. 30 x 25 m) located in the flared *wadi*'s bed that runs around 40 m southwest of the fort.⁷¹⁷ A small settling basin that does not display any derivation channel preceding it. Therefore, surface runoff waters probably fed the reservoir. The construction technique is identical to that observed for other similar structures in the nearby forts. In the downstream side, there are two arched openings that probably connected it to the *wadi*.

⁷¹⁴ Lenoir 2011, 92.

⁷¹⁵ Poidebard 1934, 45.

⁷¹⁶ Burton 1972, 364.

⁷¹⁷ Bauzou 1989a, 299; Gregory 1995-1997: 1996, 216; Lenoir 2011, 95; Poidebard 1934, 44-45.

The well mentioned north of the site by Poidebard is more probably a tank (as it is today).⁷¹⁸ East, a second, but modern, well (Poidebard does not mention), reaches a table water hundred meters deep.⁷¹⁹

It must be noted that the fort is located in a plain near the confluence of two *wadis* that could guarantee hydraulic autonomy to the fort.

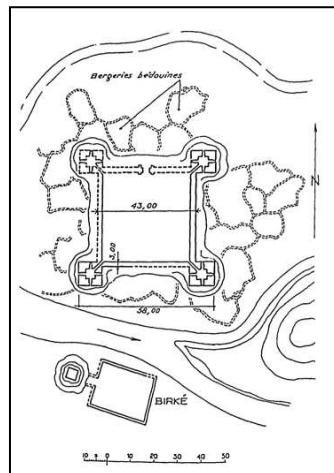


Fig. 4.13. Khan al-Trab's water supplies.
(Lenoir 2011, Fig. 49)

Khan Abu Shammat (SITE NR. 19) (Fig. 4.14)

A square (27 m) open cistern near the southeast tower and a well near the northeast tower guaranteed the water supply.⁷²⁰ The latter provides perpetual fresh water.

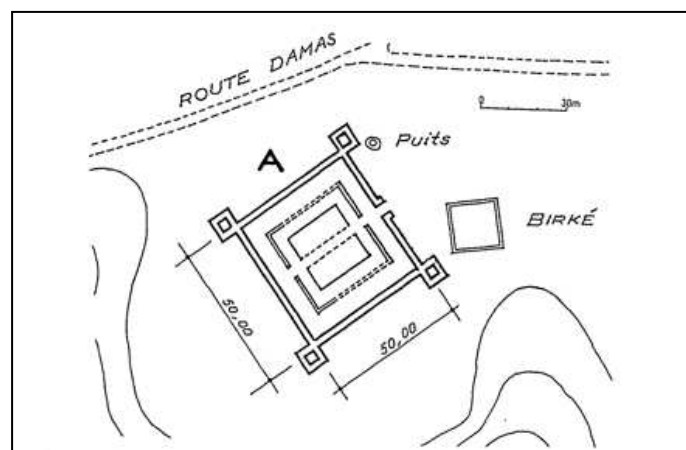


Fig. 4.14. Khan Abu Shammat's hydraulic system.
(Lenoir 2011, Fig. 50)

⁷¹⁸ Poidebard 1934, 45.

⁷¹⁹ At least in March, as stated by Bauzou 1989a, 299.

⁷²⁰ Bauzou 1989a, 297; Gregory 1995-1997: 1996, 218; Lenoir 2011, 96. For the cistern see also Burton 1872, 364.

Al-Bakhra (SITE NR. 8) (Fig. 4.15)

An artesian spring, south of the fort, and six wells guaranteed all year long the water supply for the site.⁷²¹ All six of the wells, dug into the bedrock, were situated in the two areas covered by houses, two in the east, three in the south and one between the fort's gateway and the church.⁷²² They are ancient but still used nowadays by the Bedouins to water their herd. Around the wells, the terrain is soaked after the rains of a black and viscous substance.⁷²³

Birkets and/or wells and irrigation channels, exploiting the perennial source, assured water for the gardens located north and northwest of the fort.⁷²⁴

Two aqueducts distributing water from the artesian spring in a southern direction and along the south-eastern side of the fort, through the help of a now destroyed water-lifting installation, are of a much later date, medieval or more probably modern.⁷²⁵

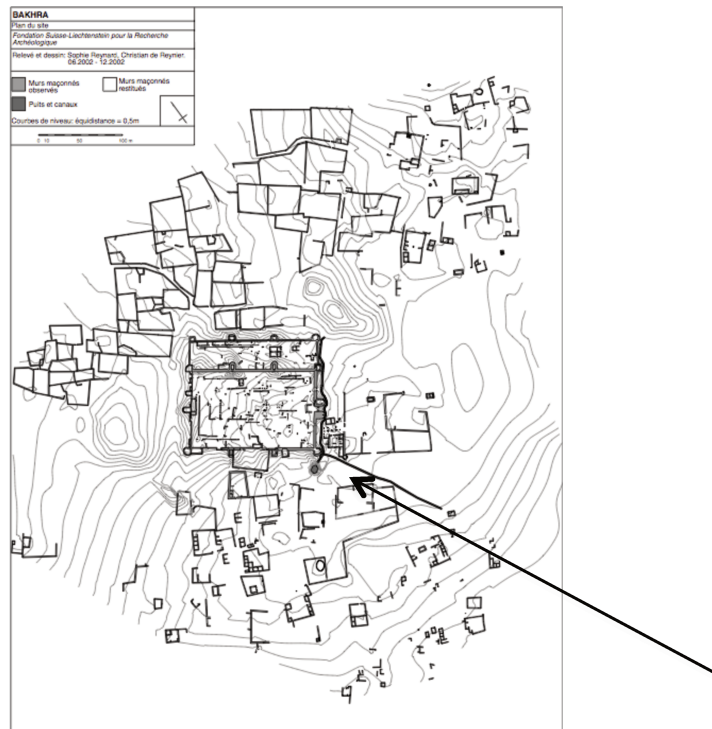


Fig. 4.15. Al Bakhra's spring and wells.
(Genequand 2004a, Fig.1)

⁷²¹ Bauzou 1989a, 333-336,338-339; Genequand 2004a, 228, 238; Gregory 1995-1997: 1996, 198; Lenoir 2011, 81; Musil 1928, 88, 142, 234; Poidebard 1934, 66.

⁷²² Genequand 2004a, 238.

⁷²³ Bauzou 1989a, 333.

⁷²⁴ Bauzou 1989a, 334.

⁷²⁵ Genequand 2004a, 238.

4.3.3. Al-Bazzurye and al-Sukkarye

Al-Bazzurye (SITE NR. 9.1, 9.2, 9.3)

Despite the fact that this site, as the followed one, have been considered rural sites, agriculturally exploited during Late antiquity, no data on water system are available. There is only one reference in Musil that stated a presence of a well into the yard beyond the arched gate of Al-Bazzurye 2.⁷²⁶

Al-Sukkarye (SITE NR.10)

The water supply was guaranteed by two stone wells, still in use today, west and north of the main enclosure.⁷²⁷ Around 1 km S-W of the site, in the top of a small hill, a large funned-shaped hole was the starting point of a *qanat*, today, filled with debris,⁷²⁸ called Qanat Bur es-Sukkari.⁷²⁹ It can be followed on ground for around 2 km northward,⁷³⁰ and on CORONA image (Fig.4.16).⁷³¹ The remains of the *qanat* disappear in a plain now devoted to dry-farming wheat. In ancient times, however, the *qanat* allowed to irrigate the area, as it was probably the case of the Abou Fawares's *qanat*.⁷³²

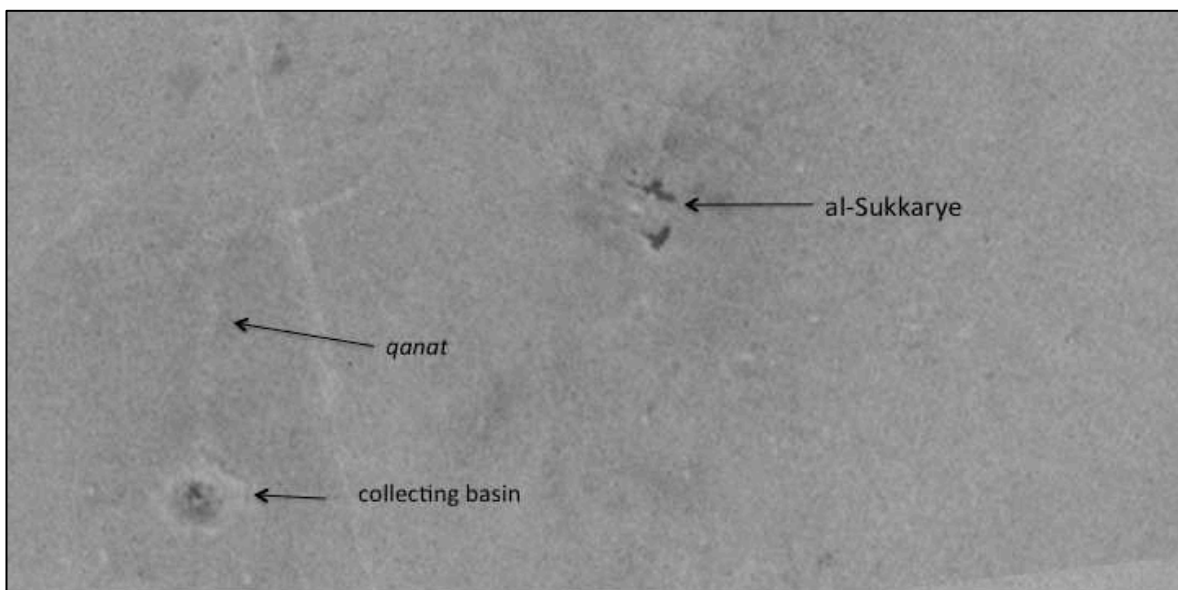


Fig. 4.16. Al-Sukkarye's *qanat*

(Image produced from CORONA image 1105-1099Fore – CORONA Atlas of the Middle East)

⁷²⁶ Musil 1928, 137.

⁷²⁷ Bauzou 1989a, 348.

⁷²⁸ But still in use until the 1980s.

⁷²⁹ Poidebard 1934, 55.

⁷³⁰ 2,7 km according to Bauzou (1989a, 348). See also Genequand 2003a, 40.

⁷³¹ CORONA image 1105-1099Fore (Nov 4, 1968). The *qanat* is slightly visible in Google Earth too.

⁷³² Bauzou 1989a, 348.

4.3.4. The Abou Fawares's *qanat*

In the northeast part of the area covered by this study and only few kilometers west of the city itself, the Italian Geoarchaeological Project has surveyed many archaeological remains. The series of milestones and the structures connected with a road running there, will be discussed in the next chapter. I will instead focus here on the remains surveyed western of the milestones. They consist on a *qanat* and some structures related to it, or possibly with the road that, in its final stretch, run nearby (PLM 114/08, Fig. 4.17.a-c).⁷³³

⁷³³ In fact, at site PLM 114/08, a tract of a paved road has been found, even if the first milestone is located more west.



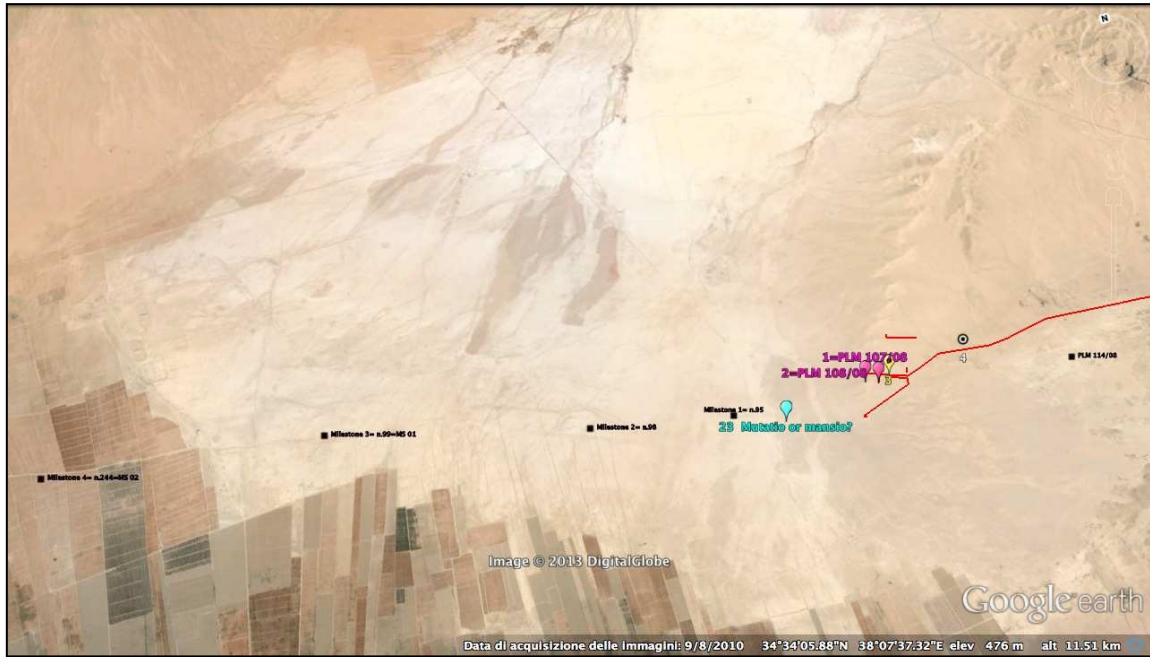


Fig. 4.17. a-c. The area west of the oasis (direction E-W).
(Image produced from Google Earth)

It is possible, using Google Earth, to establish approximately, the whole path of the *qanat*. Indeed, the characteristic *naqqabat*⁷³⁴ (Fig. 4.18) can be detected and followed. Around 1 km west of Abou Fawares, we loose its traces but still its path is clearly mark by a narrow line of green vegetation.⁷³⁵



Fig. 4.18. The characteristic regular *qanat*'s holes on the ground.
(Image produced from Google Earth)

⁷³⁴ See above.

⁷³⁵ See chap. 2.5.2. for satellite images as tool for archaeological and historical studies. Cfr. Also Hauser 2012, 217-218 and Abb.3.

This *qanat* was part of the city and surrounding hinterland's water supplies. Unfortunately, an exhaustive analysis of the entire Palmyra's water system has never been the object of an archaeological study.⁷³⁶ Therefore, a lot of questions still remain open and a chronology and development of it is not available.⁷³⁷ Moreover, scholars who discussed water sources in Palmyra tended to confuse or aggregate the terms "qanat", "aqueduct" and even "foggara",⁷³⁸ making it difficult for both Palmyrene and non-Palmyrene specialists to understand what Palmyra's water resources aggregated to, but also shows how little attention has been paid to the city's most important asset. The essential difference between a *qanat* and an aqueduct is that a *qanat* (or *foggara*) is dug into the ground from where its water is tapped, and is characterized by circular openings at frequent intervals. An aqueduct, however, is characterized by the creation of built structures, usually a channel that directs underground water and with few surface openings (*putei*), for maintenance, but these are not a construction feature.⁷³⁹ Based on the available photographic documentation, there is only one aqueduct in Palmyra, several *qanats*, all of which remain to be studied in more detail in order to understand the city's water supply, but also their chronology.

Modern scholars have called the structure presented here indifferently as Abou Fawares *qanat* and *aqueduct* and it has not been always clear to which structures they were referring too.⁷⁴⁰ The problem arises because the *qanat* under question started from the source of Jebel Rueisat, c. 5 km west of Abou Fawares, but around 1 km west of Abou Fawares we lose its traces and further west in the Valley of Tombs there are the remains of a stone channel, i.e. "Western Aqueduct", before reaching the city.

Only few studies have been carried out on these complex hydraulic structures and, moreover, the attention was concentrated mostly on the final stretch (open channel-aqueduct-distribution of water within the city itself).⁷⁴¹

⁷³⁶ As expressed also by Baranski 1997, 15 and Juchniewicz and Żuchowska 2012, 61.

⁷³⁷ For a general bibliography on the oasis's water management see: Carle 1923; Crouch 1975; Bounni, As'ad 1989, 135-137; Kobori 1990; Piacentini 2001-2002; Yon 2009; Hammad 2010. A recent chronological approach analysis has been made by Hauser 2012 and Juchniewicz, Żuchowska 2012.

⁷³⁸ This still the most recent studies, as Hammad refers to Abou Fawares and Bir al-Umy as *qanat* and aqueduct within the same sentence (Hammad 2010, 34). In Juchniewicz and Żuchowska 2012 there are no mentions of *qanawat* but only aqueducts, same in Hauser 2012 who refers to it improperly as *foggara*.

⁷³⁹ Kamash 2009, 99-106.

⁷⁴⁰ For example Piacentini 2001-2002, 526: «The city of Palmyra also had an aqueduct whose ruins are in the Tombs Valley, built in the Roman period. A further two subterranean tunnel-wells brought water to Palmyra. They are the canal of Abou Fawares whose spring rises 12 km southwest of Palmyra (Teixidor 1984, 76. The subterranean canal is 30 metres deep and 7 km long. In the Tomb Valley the canal runs in the open air, see Bounni, As'ad 1989, 141) and the canal of Biyar al-'Ami14 whose spring lies 11 km north of Palmyra (Bounni, As'ad 1989a, 141)». Still recently in Juchniewicz and Żuchowska 2012, 63-64, there is no mention of a *qanat* but only an aqueduct from the Jebel Rueisat source. The only scholar who actually classified it as *qanat* and then aqueduct was D. Crouch (1975, 163-163).

⁷⁴¹ Cfr. Schnädelbach 2010, 40-45.

For many travelers the remains of the aqueduct were the first structure they noted while approaching the town. The earliest reference is the description of the underground channel given by Lanoy and Goodyear.⁷⁴² Later, Wood and Dawkins mentioned in their account of the ruins the aqueduct running along the northern slope of the Valley of Tombs and gave more details on the underground channel with some drawings.⁷⁴³ Later travelers also referred to the water conduit, noting that besides the Efqa spring, it was an important source of water for the oasis.⁷⁴⁴ Musil, at the time of his visit in 1912, recalled that the aqueduct had been repaired and fresh water was running in it.⁷⁴⁵ Carle in his study on water supply in Palmyra described for the first time, although briefly, the course of the conduit from the spring to the city, illustrating it in a schematic plan (Fig. 4.19).⁷⁴⁶ It was then researched by Meyza in 1980s and Baranski in 1990s.⁷⁴⁷ Juchniewicz and Żuchowska effectuated a terrain prospection in 2007 and 2010.⁷⁴⁸

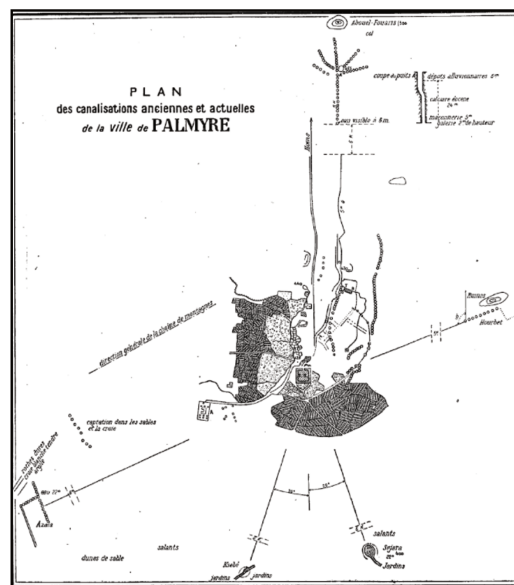


Fig. 4.19. The Abou Fawares *qanat*/aqueduct as recorded by G. Carle (early 20th century).
(Carle 1923, 161, Plan.)

The *qanat*'s source is located under the hill of the Jebel Rueisat, around 9 km west of the city. Rueisat can be translated as “little heads” or “little peaks” indicating a series of piramidal hills cut by erosion in the elongated extremity toward southwest of the Jebel at-Tar, named indeed Jebel

⁷⁴² Lanoy, Goodyear 1695, 133 (Crouch 1975, 164-165).

⁷⁴³ Wood 1753, 35.

⁷⁴⁴ Tourtechot 1735, 341 (Crouch 1975, 164-165); Addison 1838, 312; Poujoulat 1841, 101; Waddington 1861 in Chabot 1939, 361.

⁷⁴⁵ Musil 1928, 136.

⁷⁴⁶ Carle 1923, 155-156.

⁷⁴⁷ Meyza 1985, Baranski 1997.

⁷⁴⁸ Juchniewicz and Żuchowska 2012, 63-64. However, Hammad stated that in 2008-2009, he could not follow it entirely on the ground level (Hammad 2010, 49).

Rueisat. Abou Fawares is an Arabic *kunya* or name translatable as “the father of the knights”. However, there is no local tradition that identifies this character.⁷⁴⁹ The source is not visible nowadays,⁷⁵⁰ but it was described by Carle.⁷⁵¹ According to his description the water was caught at the foot of the hill by five canals (still clearly visible on Google Earth – Fig. 4.20) carved in the rock and flowed down to an underground basin 30 m deep. The crater, detectable on the ground,⁷⁵² is also visible from Google Earth (Fig. 4.20, Nr. 3), due to its light color formed by limestone debris rejected outside the catching basin.⁷⁵³ Therefore, water was conducted to the town in an underground canal with a 0.5 m gradient per km.⁷⁵⁴ The source was able to provide 1,000 m³ or 1,000,000 l of water per day.⁷⁵⁵



Fig. 4.20. Collecting underground basin of the *qanat*.
(Image produced from Google Earth)

At the foot of Rueisat hill two fragments of a broken statue of Herakles, which, in ancient times, was probably located on a column on the top of the hill, was recovered by Baranski.⁷⁵⁶ «The statue is made of limestone. The naked torso of a man in a *chlamys* and a clearly visible belt placed

⁷⁴⁹ Hammad 2010, 25 n.106.

⁷⁵⁰ For a recent photo of the spring area see Palmyrena Project website (consulted 5.08.2013):

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraW/Aqueduct/Data/page.htm?58,0>;

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraW/Aqueduct/Data/page.htm?66,0>.

⁷⁵¹ Carle 1923, 155-156.

⁷⁵² For a recent picture see Palmyrena Project website (consulted 5.08.2013):

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraW/Aqueduct/Data/page.htm?35,0>;

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraW/Aqueduct/Data/page.htm?36,0>.

⁷⁵³ Hammad 2010, Fig. 63.

⁷⁵⁴ Carle 1923, 155.

⁷⁵⁵ Bounni, As'ad 1989, 137; Hauser 2012, 218.

⁷⁵⁶ Baranski 1997, XIX.3-4. Carle 1923, 155, mentioned only general remains of a temple. See also Crouch 1975, 162; Starcky, Gawlikowki 1985, 22; Bounni, As'ad 1989, 37; Hauser 2012, 217. About the “Heracles figures” at Palmyra and their role see Kaizer 2000 who suggests that this local “Heracles” could have act as guardian at the borders of the city as apparently it did at Hatra.

obliquely at the back is 0.5 m wide at shoulders and preserved 0.7 high. The front is eroded. Another fragment represents legs, rendered in very deep relief, the right one slightly bent. This piece is about 0.75 m high». ⁷⁵⁷ The pedestal (h. 1.22 m), the base (diam. 1.13 m, h. 0.41 m), two drums (diam. 0.84 m), and the Corinthian capital (h. 0.84 m) of the column were also scattered on the hill. ⁷⁵⁸ Baranski suggested to stylistically connecting this capital to those of the porticoes of the Bel temple, dating to the 2nd century A.D. All together, statue and column, would have been around 10.5-11 m high. Prof. Morandi Bonacossi and Prof. Cremaschi (Italian Geographical Survey) who surveyed the site in the 2000s were able, only, to state at site nr. 1= PLM 107/08 (42° 18' 14.7594"E 38° 14' 20.436"N) two capitals, one of them Corinthian and two basis of a column. Few meters southeast (2-PLM 108/08 = 42° 19' 4.44"E 38°14' 18.132"N) they recovered more pieces of a column, probably coming from site 1, associated with Roman pottery (Fig. 4.20). ⁷⁵⁹ It is worth to note that in 1841 Poujoulat stated that an altar of Jupiter was still standing in the slope of the mountain. ⁷⁶⁰

From the source's point an underground channel very carefully worked, with a stone channel in the middle, stonewalls and stone labs with ventilation, i.e. a *qanat*, started that can be followed in Google Earth until around 1 km west of Abou Fawares. There was at least one staircase leading down to the underground corridor, as documented by Wood and Baranski, exactly around 1 km west of Abou Fawares. ⁷⁶¹ Near Abou Fawares (Fig. 4.17.a.: 34°33'18.61"N 38°13'2.61"E), Baranski surveyed two rectangular basins, 15 x 20 m and 8 x 11 m, both recently restored. The larger one was connected with a stone channel, 0.45 m in diameter and 1 m height at its mouth, coming from west. ⁷⁶² They may correspond to nr. 7 (34°33'15.80"N 38°13'0.12"E) and nr. 8 (34°33'16.60"N 38°13'5.84"E) of Fig. 4.17.a., but in this case, they would have been larger.

Close to the city (around 2.5 km west of it), a stone channel appears on the surface running on the ground on the slope rising north of the Wadi As-Suraysir/al-Qubur and forming the northern part

⁷⁵⁷ Baranski 1997, 15.

⁷⁵⁸ Baranski 1997, Pl. XIX.2; Hammad 2010, Fig. 62; Hauser 2012, Abb.6.

⁷⁵⁹ From Palmyrena Project website (consulted 5.08.2013):

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraW/Aqueduct/index.htm>.

⁷⁶⁰ Poujoulat 1841, 101-102.

⁷⁶¹ Wood 1753, Pl. XXVII, Baranski 1997, 14: « The staircase is 0.9 m wide. It leads 4.5 m underground to a corridor along which the aqueduct channel runs, 0.45 m wide and 0.5 m deep. The corridor is 0.88 m wide and 2.05 m high. It is built of stone blocks and covered by stone slabs. In the roof there are airshafts every 30 m».

⁷⁶² Baranski 1997, 14.

of the so-called Valley of Tombs, and on the bridges crossing the beds of perpendicular *wadis*.⁷⁶³ In the middle of the *wadi*'s bed, Baranski found underground terracotta pipelines.⁷⁶⁴ From there it becomes a stone aqueduct that runs along the slope of the Jebel Husayniyet and inside the "Camp of Diocletian", under the *principia*.⁷⁶⁵ From there, stone pipelines carried water until the so called "Water Gate", located in the eastern corner of the "Camp", bringing water for the rest of the city.⁷⁶⁶

Dating

The entire system was used in Roman times. The remains of architectural decorations and statue found on the Jebel Ruisat were dated by Baranski to the 2nd century A.D.,⁷⁶⁷ who suggested also this date as the approximately moment for the *qanat* construction.⁷⁶⁸

The section close to the city (stone channel) appears to be late since its elements date between 3rd and 8th century A.D. In fact, traces of many refurbishments, as is the case for the last section (inside the Diocletian's Camp), have been found.⁷⁶⁹

However, the terracotta pipeline found in the *wadi*'s bed, near the course of the open channel, has probably to be referred to an earlier and alternative itinerary of the aqueduct.⁷⁷⁰ Teixidor and Hammad dated this "first stage" to the 1st century A.D.⁷⁷¹ The *wadi*'s flow may have damaged part of it or at some point it was felt necessary to monumentalize it, increasing also the water potential. Unfortunately, field survey of the western part of the valley did not yield any finds connected with the underground terracotta pipeline.⁷⁷²

An archaeological research of water management had been undertaken within the "Camp of Diocletian", but it is still insufficient to clarify the whole chronology. In fact, excavation samplings brought to light traces of several refurbishments of the system. According to Meyza, who examined few sections of the "Western aqueduct" inside the "Camp", the aqueduct was

⁷⁶³ From Palmyrena Project website (consulted 5.08.2013):

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraW/Aqueduct/index.htm>. See also Baranski 1997,12-14; Juchniewicz and Żuchowska 2012,64.

⁷⁶⁴ Baranski 1997, 14.

⁷⁶⁵ <http://www.hist.uib.no/antikk/dias/Syria/PalmyraW/Aqueduct/Data/page.htm?3,0>

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraW/Aqueduct/Data/page.htm?4,0>.

⁷⁶⁶ Baranski 1997, 9-12. Also Hauser 2012, 217.

⁷⁶⁷ See above.

⁷⁶⁸ Baranski 1997, 15.

⁷⁶⁹ Baranski 1997,12-15.

⁷⁷⁰ Baranski 1997, 14.

⁷⁷¹ Teixidor 1984, 75; Hammad 2010, 49. In fact, as noted by Hauser (2012, 218, n. 51) the aqueduct interferes with some tombs that were not in use by the 2nd century A.D.

⁷⁷² Baranski 1997, 14.

definitely constructed during the reign of Diocletian.⁷⁷³ This chronology was questioned by Baranski, as stated above, but the Late Roman chronology for the section which passes through the “Camp of Diocletian” seems to be correct.⁷⁷⁴ Baranski established a typology of the pipes, based on the results of the Polish excavations. According to his research, the majority of pipelines in the camp are dated between *c.* 3rd and half of 5th century A.D.⁷⁷⁵ Some of them had to be connected with the main line of the “Western Aqueduct”.

Until the 8th century A.D., the entire system was used without any serious repairs, apart for few pipelines changed inside the city. At that time, an earthquake, which probably took place in Palmyra, must have damaged the aqueduct considerably. In fact, an Arab post-reform coin found in mortar repaired, proved that it then was restored.⁷⁷⁶ Until the end of the 1960s, when the multiplication of mechanic pumps in the Ad-Daw plain dried up completely the source, the *qanat* was still exploited to irrigate fields surrounding the farm named Mazraet Abou Fawares.⁷⁷⁷ After the 1970, the source’s basin collapsed and was forgotten, insomuch as nowadays cars crossed it.⁷⁷⁸

Function

It appears that the oasis of Palmyra was naturally supplied by the two local sources of water, i.e. Efqa spring⁷⁷⁹ and “Serail source”⁷⁸⁰. Their waters were sulfurous,⁷⁸¹ with a temperature around 29 C°. Until the Efqa spring was in function in the 1993, it was used for dermatological diseases and in the treatment of anemia and complaints of the kidneys and liver.⁷⁸² Because of the nature of

⁷⁷³ Meyza 1985, 32-33. Hammad too (2010, 49-50) dated this “second stage”, i.e. the stone aqueduct, to the end of the 3rd AD, the same period of the construction of the *principia*.

⁷⁷⁴ Baranski 1997, 8-13.

⁷⁷⁵ Baranski 1997, 11-12.

⁷⁷⁶ Baranski 1997, 13, Hammad 2010, 50.

⁷⁷⁷ Hammad 2010, 30 n.110 and 86-87.

⁷⁷⁸ Hammad 2010, Fig. 63.

⁷⁷⁹ In the inscriptions *PAT* 1917 and 1918 the name ‘*pq*’ corresponds in the Greek text to Ἐφκας. Nowadays the spring is named al-Hammam (Piacentini 2001-2002, 525, n. 4). Located South of the city on the Western slope of the Jebel Muntar, it was frequented at least since the Neolithic Period, by the famous Efqa spring.⁷⁷⁹ This spring was very attractive to the nomadic people who crossed the desert with their herds. In fact, it is located at the entrance of the oasis on the route from Damascus. The constitution of a religious pole would exercise a very strong appeal and contribute, together with the good conditions offered by the oasis, to the process of sedentarization (See Piacentini 2001-2002, Kaizer 2002, Yon 2009 for a more detailed description of the source and the cult related to it).

⁷⁸⁰ At the western edge of Jebel al Husaynat, it seems that the same geo-thermal source was tapped by a *qanat* of some 1200 meter-length, called Umm al Qanat or “Source de serail” and which may have been built by the first century AD as argued by Hammad (2010, 15-19). The Hellenistic city, located south of the Wadi As-Suraysir/al-Qubur, was alimented primarily by wells but maybe by an aqueduct (Plattern, Schmidt-Colinet 2010, 418-420; Juchniewicz and Żuchowska 2012, 63).

⁷⁸¹ Its water was sulphurous, but could be used and drunk once it had settled .

⁷⁸² Bounni, As’ad 1989, 139-140; Hammad 2010, 10.

their waters, they probably have mainly served for agricultural purposes,⁷⁸³ since they could be used also for drinking only after been settled.⁷⁸⁴

However, in Roman time the continual growth of the city caused an increased demand of water and, in order to satisfy it, several hydraulic structures bringing water from the mountains nearby were constructed. Gebel at-Tar to the west of the city delivered water via, at least, the Abou Fawares *qanat/aqueduct* (W-E) and Bir al-Umy *qanat* (N-S).⁷⁸⁵ In the Late Roman period, distribution of water seem to have followed the earlier system, even if modified for the new requirements need of the city.⁷⁸⁶

The Abou Fawares *qanat/aqueduct* was constructed to face an increased demand of water and the source at Rueisat was able to supply the city with fresh water. For this reason, Juchniewicz and Żuchowska suggested that it was too precious to use for gardens.⁷⁸⁷ However most of the scholars believed that it was exploited both for agricultural and drinking purposes.⁷⁸⁸ The source was probably exploited for agricultural needs, even before arriving at the city, in the Ad-Daw depression. In fact until the end of the 1960s, as stated above, the *qanat* alimented around 500 ha of orchards of a farm situated between the source and the city, known as Mazraet Abou Fawares, who was able to produce in wet years up to 15 dz wheat and 30 dz barley.⁷⁸⁹ Hammad suggested that some ancient levelings nearby lead to supposed that the site was already exploited in the 1st century A.D.⁷⁹⁰ Moreover, at the beginning of the *qanat's* course, north of the source's basin, a short and parallel line of *naqqabat* is visible in Google Earth. It appears to collect water from the

⁷⁸³ The Efqa spring undoubtedly always constituted an important resource for the oasis as it ensured the irrigation of the olive-trees and of the palm-trees garden south of the city until at least the 20th century (Crouch 1975, 153).

⁷⁸⁴ During her trip to Palmyra (20th of May 1900), Gertrude Bell wrote: « We rode down to one of the two springs to which it owes its existence, a plentiful supply of the clearest water, but so much impregnated with sulphur that the whole world round it smells of sulphur. The horses drank eagerly however and we went on down a line of columns to the second spring which is much purer though it, too, tastes strongly of sulphur. If you let it stand for 12 hours the taste almost goes away, but it remains flat and disagreeable and I add some lemon juice to it before I drink it. It's very clean which is a blessing.» (http://www.gerty.ncl.ac.uk/letter_details.php?letter_id=1192). Also Hammad 2010, 10.

⁷⁸⁵ Now called by the local people Umm al-Biyara. Hammad's figure (2010, 34-36. Fig. 70) of the alignment of *naqqabat* (individual openings and spoil rings) clearly shows that Bir al-Umy is a *qanat* rather than an aqueduct. See also Hauser 2012, 215-218; Juchniewicz and Żuchowska 2012, 64, 68-70.

⁷⁸⁶ Hammad 2010, 49-63; Juchniewicz and Żuchowska 2012, 66-72 (for both Late Antiquity and Islamic Period).

⁷⁸⁷ Juchniewicz and Żuchowska 2012, 63.

⁷⁸⁸ Carle 1923; Crouch 1975; Teixidor 1984, 75-76; Hammad 2010, 30, 37, who suggested however it was first for agriculture then for civic needs since fresh water was there also guaranteed by many wells. «Thanks to its natural altitude It would have irrigated the field just north, north-east and south –east of the tell».

⁷⁸⁹ Wirth 1971, 441: « Die Depression Al Mazraa westlich von Palmyra (am Fuß des Jebel el Abiad) soll in sehr guten Jahren Ernten von bis zu 15 dz Weizen und 30 dz Gerste pro ha abwerfen. Bleibt der Regen aus, dann gibt die aufgehende Saat immerhin noch etwas zusätzliche Weide ab. Auch von den Oasensiedlungen aus wird oft in ähnlicher Weise ein ergänzender Regenfeldbau in der Hoffnung auf einen über- durchschnittlich feuchten Winter betrieben». See also Pillet 1941, 166 and Dussaud 1927, 272, 472 who proposed to identify it with *Verofabula* mentioned by Ptolemy.

⁷⁹⁰ Hammad 2010, Fig. 64. Cfr. also Pillet 1941, 166: «on peut retrouver une trace de l'ancienne culture dans une modeste ferme arabe: Abou Fawares».

foothills and lead to nowhere. It was probably, instead, bringing water to the fields.⁷⁹¹ The Abou Fawares *qanat* seems also to have supplied water to two milling installations at Palmyra.⁷⁹² To support this idea, Wilson's article needs to be quoted. He has collected many examples from all around the empire which show that aqueducts and *qanawat* which supply the city, could also be tapped to supply smaller settlements and agricultural needs.⁷⁹³ Thus, even if the city benefited most from the construction of an aqueduct, or of a *qanat*, rural communities along their routes also stood to gain.

Collateral structures

Baranski reported that «the survey conducted all the way up to the source yielded very few elements which could be connected with the aqueduct, such as traces of foundations and a wall slightly above the ground level».⁷⁹⁴ Unfortunately, no more data were provided.

Site nr. 5 (Fig. 4.17.a) has been investigated by the Italian Geoarcheological Survey (= PLM 112/08). It consists on the remains of a renewed rectangular structure made of big limestone blocks with a larger enclosure around it. It is more visible from the ground than from satellite images.⁷⁹⁵ Since no more data are available we can only supposed that it was a fortified tower.⁷⁹⁶ It is not possible to establish if this was the case also for the, apparently similar, structure visible from Google Earth at site nr. 9 (Fig. 4.17.a).

Around 3.3 km west of site nr. 5. a large rectangular enclosure (100 m x 58 m ?) is visible from satellite images (Site nr. 4), clearly from CORONA image and Google Earth (Fig. 4.20-4.21). A larger enclosure surrounded it. It has not been noted during any previous surveys.

⁷⁹¹ See above 4.3. in the introduction about the *qanat*'s technique.

⁷⁹² Just before reaching the city's wall (Carle 1923, 155; Crouch 1975, 162; Kamash 2009, 233).

⁷⁹³ Wilson 1999. Cfr. Also Hauser 2012, 218-219.

⁷⁹⁴ Baranski 1997, 14.

⁷⁹⁵ See pictures from Palmyrena project website:

<http://www.hist.uib.no/antikk/dias/Syria/PalmyraW/Aqueduct/index.htm>

⁷⁹⁶ Same in Hauser 2012, 214, 218 Abb. 3.

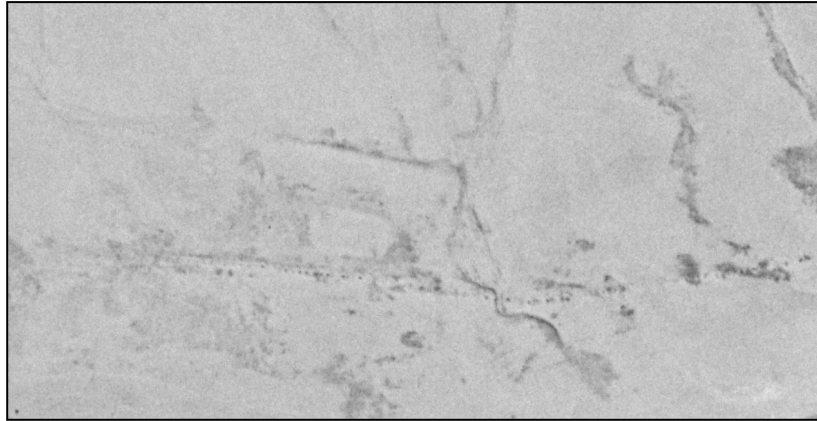


Fig. 4.21. Site nr. 4 from CORONA image 1105-1009Aft (Nov. 4, 1968).
 (After CORONA Atlas of the Middle East, University of Arkansas: <http://corona.cast.uark.edu/index.html>)



Fig. 4.22. Site nr. 4
 (Image produced from Google Earth)

This structure may have been related to the *qanat* and/or to the road running nearby (PLM 114/08-Fig. 4.17.b.).

Its structure is very similar to that of al-Bakhra:⁷⁹⁷ it seems plausible to recognize intermediate and corner towers. Therefore we can suggest considering it a late Roman fort too. If the supposition is correct, this fort may have had the role of controlling both the *qanat* and the road and of patrolling, more generally, the entire area.

To conclude, however, as rightly pointed out by Juchniewicz and Żuchowska, without large scale excavation it is impossible to determine whether the water supply system connected with the source in Rueisat was one, very complex and many times rebuilt structure or fragments of two (or even more) separate structures.⁷⁹⁸ Moreover, it is even more difficult to date and establish a

⁷⁹⁷ Lenoir 2011, Fig. 32.

⁷⁹⁸ Juchniewicz and Żuchowska 2012, 64.

connection between the hydraulic system and the structures surveyed along its path. In any case it is possible to appreciate how this area was already very exploited in Antiquity.⁷⁹⁹ This is not surprising considering the abundant of water sources there, the closeness to Palmyra.

4.3.5. Conclusions

As already pointed out before, in area where natural water resources were scarce, water installations and their management represent an active investment, not only for local consumption, whether for drinking water or for agricultural irrigation, food production, pasture but also for the requirements of the long-distance trade.

Braemer highlights the fact that when «water is plentiful, the community is structured around maintenance and common labor. It is not necessary to formulate regulations of use. If water is scarce, regulation is required, and can lead to a very sophisticated organization. Between these two extremes, are a multitude of inter-mediate forms».⁸⁰⁰

In fact, a tight control over the Palmyra's water resources was exercised, as testified in the Tax Law of Palmira (*CIS*, II, 3913 = *PAT* 0259):

P. 58 (New regulation)⁸⁰¹

[*lts*]/*mys* 'ynn trtn dy m[y] dy bmdyt' d<ynr>

«For the use of two springs of water which are in the city 800 *denarii*».

The Greek version specifies that the money to be paid is a year: χρήσεος πηγῶν β'έκαστου Χω' (G. 88).⁸⁰² Since the tax amount is very high only for purely domestic needs, it has been suggested that this was a yearly price for an access to the water for irrigation,⁸⁰³ and, possibly, a tax relating to the opportunity for caravans to water their camels.⁸⁰⁴ This fee was presumably to maintain and invest in the development of its water supply but, as for the case of the salt, it is not possible to establish how the tax levy was managed and even less how the farmer could exploit water.⁸⁰⁵

Despite the long-standing debate among scholars, there is no conclusive evidence, which could let to understand which sources were mentioned in the text.⁸⁰⁶ Interpreting literary the phrase “sources in the city”, it should mean the sources *intra muros*, i.e. the source Efqa and perhaps that

⁷⁹⁹ M. Cremaschi and A. Perego in Magnani *et alii* (forthcoming).

⁸⁰⁰ Braemer *et alii* 2010, 92. For water regulation in Roman time Teixidor 1984, 76-77 and Al-Karaimh 2012.

⁸⁰¹ Gardner *et alii* 2005, 49.

⁸⁰² Gardner *et alii* 2005, 41.

⁸⁰³ Teixidor 1984, 75-76. Same opinion in Matthews 1984, 177 and Piacentini 2001-2002, 528.

⁸⁰⁴ Chabot 1922, 30-31.

⁸⁰⁵ Teixidor 1984, 77.

⁸⁰⁶ Mainly Juchniewicz and Żuchowska 2012, 63. 65; Matthews 1984, 177; Smith 2013, 69-72; Teixidor 1984, 75-76; Yon 2009a.

mentioned by Carle as the “source of the Serail”.⁸⁰⁷ Sources in the city could mean also places on the surrounding territory, like that at Ruesiat, brought to the city by the western *qanat/aqueduct*. Of this opinion, Teixidor proposed to determine source Efqa and source at Ruseisat as two mentioned in the Tax Law. However, not all scholars agree for an economic or agricultural use of the source Efqa in Roman time.⁸⁰⁸ Unfortunately, as stated above, the lack of a systematic study on Palmyra’s water supply will leave the question open. In any case, as testified by Musil, still until 1912, the use of water was regulated in Palmyra: «Formerly water was cheap, but now anyone starting a new garden acquire perpetual lease for a payment of twenty Turkish pounds (\$ 90) per hour».⁸⁰⁹

The Tax Law of Palmyra informs us there was tax condition for using the water sources related to the city. There is no direct evidence, available, that in the hinterland the case was similar, but the option can be suggested perhaps in a less extended way.⁸¹⁰ In fact this was the case for example that comes out from the Babatha Archive where private properties rights were outlined in detail: two documents make it clear that each landowner had a regulated time for tapping the nearby *wadi*’s channel.⁸¹¹

In any case, it is important to point out that organizing and controlling the most important resource, i.e. water, was one of the main instruments of appropriation of space, as well as the road system.⁸¹²

4.4. Local production

4.4.1. Agriculture

This paragraph aims to propose possible patterns of agricultural exploitation in the Southwest Palmyrena through an analysis of the, unfortunately scattered, epigraphical and archaeological data available.

Though there has been no major climate change in the last two millennia, the Syrian steppe, including the Palmyrene, was more wet and fertile in antiquity than it is now also because it

⁸⁰⁷ Carle 1923, 153-154. Archaeological data on the “source of Serail” are very blurry and unclear.

⁸⁰⁸ Juchniewicz and Żuchowska 2012, 63. The religious preeminence of the source has never been questioned.

⁸⁰⁹ Musil 1928, 145.

⁸¹⁰ Teixidor 1984, 77. «Si cela ne fut pas le cas; il faudra conclure qu’ils s’acquittaient de leur taxes lors de la vente des produits; on n’oublira pas que ce produits circulaient librement à l’intérieur de la Palmyrène (P. 112-113), et il est difficile d’imaginer que les agriculteurs aient pu échapper à toute imposition fiscale».

⁸¹¹ The Babatha archive, found in 1961 in a cave in the Judean desert contains a series of documents dated between A.D. 94 and 132 in Aramaic, Greek and Nabatean which formed a private archive of the Jewish woman called Babatha, from the village of Maoza located somewhere at the southeastern end of the Dead Sea. Butcher 2003, 142-143, (bibliography p. 449).

⁸¹² Cfr. also Hauser 2012, 218-222.

undergone environmental degradation. Conditions for farming in the area surrounding Palmyra are, now, definitely much worse than they were in the Roman period, characterized by «une avancée des cultures vers le sud, une densification de la couverture végétale et une meilleure alimentation des nappes».⁸¹³ However, also in ancient time distribution of natural water supply in the region was very uneven, and water, more than other resources, has shaped the pattern of settlements. In fact, precipitation is highly variable and along with cooler winter temperatures, the principal determinant of successful cultivation. For example, in zones where average annual precipitation is less than 150 mm, as for most of the Southwest Palmyrena, success can be anticipated in only one out of three years.⁸¹⁴

However, the agricultural exploitation of the dry steppe is not only a question of precipitation but also, as seen above, of water management. In fact, stable settlements where the economy was based on agriculture, horticulture combined with pastoralism, have been found even in areas between 50-100 mm isohyet like in Negev area and Southern Jordan,⁸¹⁵ or even less (4-5 mm) as in the Egyptian Eastern desert.⁸¹⁶

Palmyra as an oasis could count on steadily productive harvest because of its artesian sources.⁸¹⁷ The same did not apply to the steppe areas of *badiya*, where occasional rains can be used to sow one-off crops, but the only source of water is supplied by a seasonal watercourse, i.e. a *wadi*.⁸¹⁸ However, the *wadi* itself, presents an advantage: since the sediments accumulated are thick and silted and the water accumulates there during the rainy season, so the soils remain wet for longer than anywhere else. Thanks to this, some cereal crops can be planted in wet years despite the scarcity of average annual precipitation.⁸¹⁹ Following the same method, at the beginning of the 20th century, cotton was grown in the sediments of the Harbaqa's reservoir.⁸²⁰ Without further evidences it is possible only to hypothesize that this could have been the case for some settlements near *wadis* as Khan al-Hallabat, Harbaqa fort, Khan al-Qattar, al-Basiri, Khan al-Manquora, Khan al-Trab.

⁸¹³ Sanlaville, Traboulsi 1996, 32-33; Meyer 2013, 270-271; M. Cremaschi and A. Perego in Magnani *et alii* (forthcoming). Cfr. also chap. 1.4.

⁸¹⁴ Wirth 1971, 88-93; Hole 2009, 261.

⁸¹⁵ Wilkinson 2003, 170-172 and recently the *Petra Archaeological Project* (Brown University - Prof. S. Alcock): <http://www.uc.edu/news/nr.aspx?id=17078> (consulted 5.11.2013).

⁸¹⁶ Sidebotham 2011. Here however, water was used only for settlements, road stations and mining communities rather than for agriculture.

⁸¹⁷ Extra water requirement for agriculture was supported by the creation of *qanawat* and aqueducts as the Western one.

⁸¹⁸ Musil 1928, 147 (referring for fields northwest of the city): «these fields depend upon the moisture from the rains only; for this reason they are called ba'l (sun-fields), because, when the rain is insufficient, they may easily be destroyed by the sun».

⁸¹⁹ Matthews 1984, 162.

⁸²⁰ Jabbur 1995, 59, Fig. 8.

The fact that cultivation was practiced to a substantial degree within the Palmyrene territory is supported by epigraphical evidences. As for the case of another natural resource, salt, the Tax Law (CIS II, 3913) is still the most important evidence for establishing the economic importance of the hinterland for the city's prosperity. The Tax Law refers in most of each parts to agricultural products brought into the city and sold to the local market.⁸²¹ Among the commodities, for which provision is carefully made are, apart for salt, dried products (nuts, almonds, pistachios and similar), olive oil, salt fish, wheat, wine, fodder and pinecones (Table 1.). Evidently all these products were relevant to the normal functioning of the life in the region of Palmyra. Recently Hoffmann-Salz has collected all possible references to these products, as well as fruits, not mentioned in the Tax Law. She considered also archaeological and iconographic sources, mainly Palmyrene *tesserae* and architectonical decorations.⁸²² For what it concerns wine it is also interesting to quote a funerary inscription mentioning “mature wine” from a private Palmyrene cellar opposed to one imported «in skins from the west» given to the Gods by Yarhai Agrippa in A.D. 243.⁸²³ It appears to me, that there is here a confirmation to local wine production, even if in small quantities and for private purposes.

All the data acquired seem to suggest that these goods were also produced locally. This fact is further confirmed by the Tax Law because it clearly distinguishes between produces carried to and from the villages, in the territory of Palmyra, where no charge is exacted, and loads brought in from outside its boundaries subjected to a 1 *denarius* taxation.⁸²⁴ This appears to be an attempt to support and promote internal exchange of local production. The same situation appears for the livestock practice, which will be examined in the following paragraph.

PRODUCT	BEAST OF BURDEN	CONTAINER	IMPORT	EXPORT	TAX (EACH) ⁸²⁵	GREEK ⁸²⁶	PALMYRENE
Dried produce/pine cones ⁸²⁷	camel	-	x		3 D	9-11 NL	7-8 NL

⁸²¹ It also fiscal pastoral rights, slave market and divers day-to-day services offered by prostitutes and leather-workers, by work-shops and bazaars (G. 73-83; P. 47-55, 125-127).

⁸²² Hoffmann-Salz 2011, 421-424. For the *corpus* of *tesserae*: du Mesnil du Buisson 1944; Ingholt, Seyrig, Starcky 1955.

⁸²³ PAT 2743; Dussaud 1927b; Milik 1972, 153.

⁸²⁴ G. 187-191: Τῶν βρωτων τὸ κα(τὰ) τὸν νόμον τοῦ γόμου δην(άριον) εἴστημι πράσσεσθαι ὅταν ἔξωθεν τῶν ἔξάγηται. Τοὺς δὲ εἰς χωρία ἢ ἀπὸ τῶν (χω)ρίων κατακομίζοντας ἀτελεῖς εἶναι, ὡς καὶ συνεφώνησεν αὐτοῖς. P. 109-113: *l't'mt' hy<k> bnm[w]s' l't'wn' 'qymt dy yhw' [mtgb]' dnr mdy yhw' mt[']l br mn thwm' 'w m'pq mn dy mpq l[qry]' ['w m]'l mn qry' mks l'hb hyk dy 'p hww spwn.*

⁸²⁵ D = *denarius*; A = *assarius*.

⁸²⁶ NL = new law; OL = old law.

⁸²⁷ “As to pinecones and similar produce carried for marketing, it is determined that the tax should be reckoned as for dried produced”, G. 191-193 (Old tariff), P. 114-117 (Old tariff).

Dried produce/pine cones	camel	-		x	3 D	12-13 NL	9 NL
Dried produce	donkey	-	x		2? D	14 NL	10 NL
Dried produce	donkey	-		x	2? D	15 NL	-
Purple-dyed fleece	-	-	x		8 A	16-17 NL	11-12 LD
Purple-dyed fleece	-	-		x	8 A	18 NL	11-12 NL
Purple-fleece			x		4 D	-	67 OL
Purple-fleece				x	4 D	-	67 OL
Perfumed oil ⁸²⁸	camel	Alabaster vessel	x		25 D	19-20 NL	13-14 NL
Perfumed oil	camel	Alabaster vessel		x	13 D	21-22 NL	15-16 NL
Perfumed oil	camel	Goat-skin	x		13 D	23-24 NL	17-18 NL
Perfumed oil	camel	Goat-skin		x	7 D	25 NL	17-18 NL
Perfumed oil	donkey	Alabaster vessel/jar	x		13 D	26-27 LD	19-20 NL
Perfumed oil	donkey	Alabaster vessel/jar		x	7 D	28 LD	19-20 LD
Perfumed oil	donkey	Goat-skin	x		7 D	29-30 NL	21-22 NL
Perfumed oil	donkey	Goat-skin		x	4 D	31 NL	21-22 NL
<u>Perfumed oil</u> ⁸²⁹			<u>Monthly tax on selling</u>		<u>2 A</u>	<u>-</u>	<u>46-47 NL</u>
Olive oil	camel	4 goat-skins	x		13 D	32-34 NL	23-24 NL
Olive oil	camel	4 goat-skins		x	13 D	35 NL	25 NL
Olive oil	camel	2 goat-skins	x		7?? D	36-38 NL	26-27 NL
Olive oil	camel	2 goat-skins		x	7?? D	39 NL	26-27 NL
Olive oil	donkey	-	x		7 D	40-41 NL	28 NL
Olive oil	donkey	-		x	7?? D	42 NL	28 NL
<u>Olive oil</u>			<u>Monthly tax on selling?</u>		<u>?</u>	<u>72-74 LD</u>	<u>-</u>
Animal fat	camel	4 goat-skins	x		13 D	43-44 NL	29-30 NL
Animal fat	camel	4 goat-skins		x	13 D	45 NL	29-30 NL
Animal fat	camel	2 goat-skins	x		7 D	46-47 LD	31-32 LD

⁸²⁸ = unguents.

⁸²⁹ It can be only the translation of the olive oil monthly tax.

Animal fat	camel	2 goat-skins		x	7 D	48 LD	31-32 LD
Animal fat	donkey	-	x		7 D	49-50 LD	33 LD
Animal fat	donkey	-		x	7 D	51 LD	33 LD
Salted fish	camel	-	x		10 D	52-53 LD	34-35 LD
Salted fish	camel	-		x	??	54 LD	34-35 LD
Skins ⁸³⁰	-	-	x		2 A	84-85 LD	56 LD 142-144 OL
Skins	-	-		x	2 A	84-85 LD	56 LD 142-144 OL
Butchered animals ⁸³¹					??? (Italian A)	181-182 OL	102-103 OL
Wheat	Camel	-	-	-	1 D	89-90 LD	59-60 LD
Wine	camel	-	-	-	1 D	89-90 LD	59-60 LD
Straw and similar	camel	-	-	-	1 D	89-90 LD	59-60 LD
Bronze statues					??? ⁸³²		128-130 OL

Table 1. Products attested in the Palmyra Tax Law.

1 Wagon = 4 camel-loads (G. 12-15; P. 14; 66)

As rightly pointed out by Smith, the Tax Law highlights the integration of the city and countryside, in particular that related to food production, necessary to sustain community development. The city served as an important regional market and as a regional center where handling disputes over such issues as local taxation and property rights.⁸³³

Further epigraphical evidences support this scenario. From Khirbet el-Bilaas about 75 km northwest of Palmyra, for instance, an inscribed column drum was found that identifies the

⁸³⁰ Camel skins tax-exempt, P. 122 (Old tariff).

⁸³¹ In case of animals rejected on account of natural death, the tax is not payable (G. 185-186/P. 108).

⁸³² «Taxed as for bronze (??) and for each image half its weight and for two images a full load».

⁸³³ Smith 2013, 72-74.

boundaries of the territory of the Palmyrenes, the *fines regionis Palmyrenae*,⁸³⁴ as well as “arable fields of the city” (*[a]rva civitat[is]*).⁸³⁵ It is not clear whether this second text referred to *arva civitatis Hemesenorum* or *Apamenorum*. Due to space limit a reading as *Palmyrenorum* must be excluded. It was very important to establish the limits of the region not only for political purposes but also for fiscal reasons. In fact, taxation’ charges for grazing rights were an important source of income for the city as testifies by the Tax Law.⁸³⁶ Perhaps also the milestone from Qasr al-Heir al-Gharbi, which delimits the territory between Palmyra and *Emesa*, has to be intended in this sense.⁸³⁷ It would then being an indirect reference for farming lands within the region under study. A similar reference to agricultural land comes from a different section of the Palmyrene hinterland: from the Qa‘ara depression, in the desert roughly 200 km southeast of Palmyra, a Palmyrene inscription commemorates and blesses a group of “harvesters” (*hsdy*) who were “here at the boundaries” with Abgar, son of Hairan, giving the names and the fathers’ name of five other men and the tribe of a sixth, who is described (without patronymic) as a “herald” (*m‘zyn*).⁸³⁸ Apart for the interpretation, if this text was referring or not to real “boundaries”,⁸³⁹ the inscription is clear evidence of cultivation, no doubt of a cereal crop possibly related to *wadi*-agriculture in winter months.⁸⁴⁰ This, as already pointed out before, was a common practice. Going further it seems also that the inscription is mentioning a specialized group of reapers that could be engaged in the Palmyrene hinterland when necessary.⁸⁴¹

From this latter inscription, as well as from the Tax Law (especially concerning natural resources’ exploitation like water and salt and grazing rights), it seems that land property was in public hand. However a community property for such extended territory is probably unlikely. One would expect that “les notables” of the city owned a vast stretches of land in the countryside, perhaps even renting plots out, but there is no compelling evidence that this was the case. Due to the lack of data, the question of how much land was public versus private cannot be answer but it is highly probable that, still in a mix situation, the city itself possessed most land as suggested by epigraphical evidences.⁸⁴²

⁸³⁴ *AE* 1939, 179.

⁸³⁵ *AE* 1939, 178.

⁸³⁶ P. 149, G. 233-237. Cfr. 4.4.2.

⁸³⁷ *AE* 1939, 180 = Schlumberger 1939b, 63-64 = *IGLS* V, 2252 : *Fin[es] inter Hadriano[s] Palmyrenos et [He]mesenos*. *Emesa*, or modern Homs, lies c. 150 km west of Palmyra. See also chap. 1,1.

⁸³⁸ Teixidor 1963, 33-46; Teixidor 1984, 25; Matthews 1984, 162-163. Yon 2002, 128, note 248.

⁸³⁹ See chap. 1 n. 8.

⁸⁴⁰ Matthews 1984, 162.

⁸⁴¹ Teixidor 1963, 33-46; Matthews 1984, 163-164.

⁸⁴² Hoffmann-Salz 2011, 417-419; Yon 2002, 126-130.

The archaeological evidence for agriculture, whether in the oasis or the countryside, however, is very scanty. The only attempt to explore archaeologically the agricultural regime has been carried out in the northwest area of Palmyra. The city dominated there «une grande banlieue rurale».⁸⁴³ As already mentioned above, the ecological conditions in antiquity were different from the present. Today the hillsides are bare due to modern excessive felling and usage, but until recently they were covered by rich forests of Terebinth trees.⁸⁴⁴ Matthews raised the possibility that the area was more wooded than it currently is, given the mention of pinecones in the Palmyrene Tax Law being taxed if they are carried for sale.⁸⁴⁵ In this mountainous area, in the 1930s Schlumberger registered several villages or estates in the Jebel Char tableland and some smaller forts.⁸⁴⁶ The recent (2009-2013) Palmyrena Project of the University of Bergen conducted by Prof. Meyer, has revealed, through ground inspections and satellite images, more villages in the Jebel Abyad and Jebel Merah and Jebel Riġmên area, larger forts between the mountains and along natural lines of communication.⁸⁴⁷ The sites were occupied only since Roman time but lasted until the Omayyad period, considerably longer as was supposed by Schlumberger.⁸⁴⁸

Extensive traces of water catching systems have been surveyed there. They consist on small dams across minor *wadis*, aqueducts and terracotta water pipes, canals, cisterns and deep wells either cut into the rock reaching the aquifer waters or dug at the edges of the *wadis*.⁸⁴⁹ In a nutshell, the same hydraulic installations surveyed in the Southwest Palmyra. The villages or estates have been interpreted as pastoral holdings (sheep and goats) or as centres of stock raising, camel herding or horse breeding.⁸⁵⁰ The only exception was Young who proposed a mixture of farming and pastoralism. According to him the aristocracy originally based their position on the wealth from these estates, not the caravan trade, but he did not speculate as to how farming was possible there. The recent archeological evidence supports this idea of a more intensive agricultural exploitation of the area. Most likely cultivation included olive, fig and pistachio groves. All products still common nowadays in the region.⁸⁵¹ The fact that olive agriculture was part of the local ancient economy seems to be confirmed, also, by artistic evidences. One face of a bronze *tessera* from

⁸⁴³ Schlumberger 1951, 130.

⁸⁴⁴ Especially the Jebel Muntar was known as the “Mount of Terenith”, Musil 1928, 147-149; Wirth 1971, 130 (“*pistacia atlantica* up to 5m high”). French photos from the 1920s confirmed it (Poidebard 1945, Pl. XXI, XXIII; Schlumberger 1951, Pl. I.4, XI.1). See also Bounni 1989, 258, Jabbur 1995, 56; Meyer 2013, 272.

⁸⁴⁵ As other dried produces. Matthews 1984, 171, 179.

⁸⁴⁶ Schlumberger 1951.

⁸⁴⁷ Meyer 2013, Meyer 2014 (forthcoming).

⁸⁴⁸ For Schlumberger the development of the area could be ascribed to between the 2nd and 3rd century A.D. The Norwegian mission also changed substantially our knowledge of the area before Classical period (Meyer 2013, 276; Meyer 2014 forthcoming).

⁸⁴⁹ Meyer 2013, 272-274; Meyer 2014 (forthcoming).

⁸⁵⁰ Schlumberger 1951, 131-133; Will 1957, 271-273; Gawlikowski 1994, 31.

⁸⁵¹ For terebinths see above. For olive see <http://ressources.ciheam.org/om/pdf/a73/00800334.pdf>.

Palmyra names the god Bel as the protector of olives.⁸⁵² While Bounni believes that the protector god of olives, known as Gad Mishiya, testifies to the fact that olive trees were the principal cultivation of the city, the evidence is so far too scant to come to such conclusions.⁸⁵³ Olive-oil press beds close to the temple of Bel suggest that the oasis of Palmyra was producing olives along with dates and other products and also its own oil.⁸⁵⁴ Olive oil was also produced in the surroundings of Palmyra as well, such as at Fourqlous, one of the stops towards *Emesa*, where olive oil presses have been recorded.⁸⁵⁵ Palmyra's long-standing olive production may, in part, be reflected in the variety of its olives, as Palmyra seems to have more species than anywhere else in Syria.⁸⁵⁶ Olive oil production may have been one of the staple goods produced within the territories of Palmyra, but it may not have produced sufficient for export or even to sustain itself. In A.D. 130-131, a statue was dedicated to *Male Agrippa* for providing olive oil to the city and troops, on the occasion of Hadrian's visit to the city, but this could have been either from his own property or imported.⁸⁵⁷ The Tax Law mentions the import of olive oil in goat skins, both on donkeys and camels, with different prices according to how many bags a camel would be carrying, clearly implying that although the city was producing olive oil, it was not self-reliant.⁸⁵⁸

Barley was also grown, as confirmed by a pollen analysis the Norwegian team conducted on a mud brick from Khaled al-Ali, a sample site in the surveyed area.⁸⁵⁹ This confirmed Schlumberger discovery of bars to crush grain or barley.⁸⁶⁰ Still in modern times, cultivation of barley, even close to 100 mm isohyet, was initiated by the central government at the end of the 1950s as part of a large program to settle the Bedouins after the abolishment of the tribal law in 1958. According to local Bedouin, in years with optimal precipitation, the yield (a work reserved to women) was good but in drier years the seed grain was wasted, and the program was quickly abandoned.⁸⁶¹

Other crops may well have been imported and cultivated locally though it is difficult to gauge the evidence for the existence, range and scale of these products without further scientific research.

⁸⁵² Du Mesnil du Buisson 1962, 21, 23; though this may scarcely be enough to justify Raschke's claim (Raschke 1990, 840) that it testifies to the importance of olive oil production at Palmyra. Cfr. Hoffmann-Salz 2011, 423. Cfr. Also Teixidor 1984, 74.

⁸⁵³ Bounni 1989, 258.

⁸⁵⁴ <http://www.flickr.com/photos/akocman/4604009193> (consulted 15.09.2013).

⁸⁵⁵ Fevrier 1931, 131. Also notes that Betproclis has olive groves.

⁸⁵⁶ <http://ressources.ciheam.org/om/pdf/a73/00800334.pdf>.

⁸⁵⁷ *CIS*, II 3959 = *PAT* 305 = *IGRR* III 1054 = *Inv.* I. 2;

⁸⁵⁸ P. 23-29; G. 32-40.

⁸⁵⁹ The site is 71 km northwest of Palmyra. See Meyer 2013, 274; Meyer 2014 (forthcoming).

⁸⁶⁰ Schlumberger 1951, 113.

⁸⁶¹ Meyer 2013, 272.

Undyed cotton textiles remains have been found in Palmyrene funerary contexts.⁸⁶² Cotton was grown in Mesopotamia from the end of the 7th century B.C., and we know that by the 13th century, Syria was one of the leading cotton exporting countries in the Mediterranean, with the best cotton grown in the region between Aleppo and Hama.⁸⁶³ The possibility that cotton was grown at Palmyra cannot be excluded: this was the case in modern recent times in the area of the Harbaqa dam.⁸⁶⁴ So far, no local evidence for the Roman period has yet been found to suggest this, despite the fact that cotton would be, a cash crop, ideally suited to local climate. In fact, the cultivation of cotton in the Libian Sahara desert and in Egypt, and hence at the margins of the Roman Empire is now well attested, and most likely represented as an important investment into cash crops.⁸⁶⁵ Any archaeological studies on agricultural exploitation have been carried out in the area under study and there are not direct references to cultivated field, products or people engaged in farming practice available. Nevertheless, it seems highly unlikely that all the agricultural products listed in the Tax Law came only from the Northwest Palmyrena. However, it is possible only to hypothesize potential scenarios based on the very poor data available. The opportunity of *wadi*-bed agriculture has been already suggested above, as well as the fact that the western *qanat*/aqueduct was intended for farming purposes. Palm trees could also be grown on salty terrains as for example at the margins of a *sebkhat*.⁸⁶⁶ The area around al-Bakhra, including al-Bazzurye and al-Sukkarye, is very rich of water. Al-Bakhra itself can rely on perennial water thanks to the presence of an artesian spring. Already Musil referred to the possibility of cultivation there in ancient time.⁸⁶⁷ According to Teixidor the area was already exploited in classical time for agriculture, horses and camels breeding by Palmyrenes who were subsequently buried there, as confirmed by Palmyrene funerary inscription found at al-Bazzurye dated to A.D.171.⁸⁶⁸ Moreover, Bauzou suggested that *qanat* at al-Sukkarye was intended for this reason rather than to supply the site itself.⁸⁶⁹ In any case, also on the basis of architectural considerations of the settlements (mainly al-Sukkarye and al-Bazzurye), it appears that a rural character for the area is undeniable, at least for Late Antiquity.⁸⁷⁰ This is confirmed by the geoarchaeological and paleoenvironmental

⁸⁶² Schmidt-Colinet 1995b; Stauffer 1996, 425.

⁸⁶³ Cotton remains Syria's main agricultural export, and represents a *c.* 270 million dollar industry: http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Cotton%20and%20Products%20Annual_Damascus_Syria_4-14-2011.pdf (consulted 15.09.2013). Also Wirth 1971, 194-199.

⁸⁶⁴ Jabbur 1995, 59 Fig. 8.

⁸⁶⁵ Schörle (forthcoming).

⁸⁶⁶ Moinier 2012, 180-181.

⁸⁶⁷ Musil 1928, 88. Same idea in Bounni, Al'ad 1989, 128. al-Bakhra in fact, can rely on perennial water thanks to the presence of an artesian spring.

⁸⁶⁸ *PAT* 1791. Teixidor 1963, 35; Teixidor 1984, 71. For discussion see site's sheet chapter 3.

⁸⁶⁹ Bauzou 1989a, 348.

⁸⁷⁰ Genequand 2003a, 40; 2004a, 228. Maybe even earlier, 2nd century A.D. (Hauser 2012, 219).

results of the Italian mission that suggested in classical time a better quality of the soil than in modern time «propice à l'agriculture et capable de soutenir la dense occupation anthropique témoigné par l'évidence archéologique». The process of land degradation and aridification typical of today's situation, would have taken place only later, in post-classical period.⁸⁷¹

For the area just west of the city, it has to be considered the hypothesis that the al-Karasi altars' group were erected there, in the 2nd century A.D., in order to consecrate a grove of tree and the cultivation of the surrounding area, during a sort of agricultural spring festival.⁸⁷² This would have proved an agricultural exploitation of the area, connected also perhaps with the *qanat* running not far north, already in Antiquity.⁸⁷³ In fact, the land around the altars is still cultivated today, as it is visible in Google Earth.

The problems relating to the dating of the construction of the Harbaqa dam have already been pointed out. Meyer, who believes that at least part of the actual Harbaqa dam was built in Roman time, considered it an economic investment in agricultural exploitation of the area, in order to supply the city.⁸⁷⁴ Going further, some rough estimates of the capacity of the dam in relation to irrigation have been made:⁸⁷⁵ if the yearly precipitation is 100 mm, i.e. below the average of the region, the area will receive 60,000,000 cubic metres of water, in very dry years (60 mm) only 36,000,000 cubic metres. Not all of the rain would have reached the dam as surface water of course. Some of it will evaporate; some of it will penetrate the surface. As the Palmyra range is a rising mountain range, the sedimentary layers in the catchment area are relatively thin, in contrast to the plain north of the mountains and the Ad-Daw,⁸⁷⁶ and the drainage of the catch-area will lead ground water towards the dam. Ground water is still pumped up from the now silted up area behind the dam.⁸⁷⁷ Since the artificial reservoir created by the dam was 1,550 m long and 800 m large, its capacity could have been around 5,000,000 cubic metres if functional.⁸⁷⁸ If we accepted

⁸⁷¹ M. Cremaschi and A.Perego in Magnani *et alii* (forthcoming).

⁸⁷² Seyrig 1933b, 269: «De plus points de la contrée aujourd'hui stérile qui s'étend à l'ouest de Palmyre avaient été aménagés avec grand soin dans l'antiquité.... Le principal souci de ces gens, comme de nos jours celui des bergers et des jardiniers de Palmyre, devait être l'attente de la pluie, toujours rare, et dont le retard pouvait les ruiner complètement Comme le culte de la foudre ne présente pas d'intérêt pour le commerce des caravanes, c'est probablement à cette partie terrienne de la population qu'il faut attribuer l'origine du culte agraire qu'est celui du dieu anonyme». Pillet 1941, 16-17. The area around al-Karasi is more wet itself because it is located in a corridor protected on three side by mountain chains apart for the west side (*Emesa* direction) from where the rain comes from. See also site's sheet chap. 3.

⁸⁷³ Seyrig 1933b, 267-260; Hausen 2012, 218-219.

⁸⁷⁴ Meyer 2013, 270; Meyer 2014 (forthcoming). I will go back to this topic on paragraph 4.4.4.

⁸⁷⁵ The calculations have been carried out by Jonatan Krzywinski, Heritage management office city of Bergen who was member of the Palmyrena Project of the University of Bergen. Meyer 2013, 270 n. 1, Meyer 2014 (forthcoming).

⁸⁷⁶ Wirth 1971, 51-53.

⁸⁷⁷ Jabbur 1995, 54.

⁸⁷⁸ Safadi in Saliby 1990, 485. Saliby himself proposed 12,000,000 m³. Same amount is given by Calvet, Geyer 1992, 86; Geyer 2004, 298; Meyer 2014 (forthcoming). Poidebard (1934, 188) proposed 140,000, Bounni, As'ad (1990,

Kamash' idea of two distinct phases, then the original Roman dam must have been lower than the actual dam, and the capacity considerably less. If the main function of the dam was to store the water from the rainy season, for use during the rest of the year, the irrigated fields or gardens may have been of a relatively modest size. However, if the water was used for the cultivation of cereals the actual capacity of the reservoir is a misleading criterion. The fields do not need water in the dry summer months, but in the rainy season, especially in March and April, which are the critical months.⁸⁷⁹ An important function of the dam, apart from storing water, is to control the water flow from the catch area to ensure that the fields are watered at the right moment, and that the crops are not washed away during heavy rainfall.⁸⁸⁰ Starting from a very low estimate, 2,500,000 m³, taking in account evaporation and waste during the transport and distribution, the dam can, as an example, feed fields, properly prepared by ploughing, with barley, which needs 200 mm, covering an area at least of 2,500 ha (100 mm rain + 100 mm extra water). A minimum yield of 1,000 kg/ha on a simple fallow system can be taken in account.⁸⁸¹ The soil in itself is very fertile,⁸⁸² and manure from sheep, brought in for grazing after the harvest in the beginning of the hot season on the *badiya*, would have increased the productivity of the fields.⁸⁸³ 2,500 ha will then produce around 2,500,000 kg of barley, enough to feed between 7,000 and 7,500 adult males, doing hard manual labour, living on corn, with a small supplement of wine, olives and oil, if we use the slave rations recommended by the Roman author Cato the Elder, i.e. about 340 kg a year.⁸⁸⁴ Of course other members of the population (women, children, the elderly) have to be taken in account, but their daily diet could also be supplemented with olives, oil, animal fat, dates, cheese, vegetables and fruit. According to the scholar however, these calculations are based on absolutely minimum figures. The amount of water passing the al-Barde pass has of course been considerably higher than 2,500,000 m³ even in dry years, but it gives us an idea of the agricultural potential of the dam, if the crops are barley or even wheat, which needs 250 mm. In any case, even a relatively low Roman dam with attached fields would be able to feed a large population of several thousand people. Crouch proposed that, in the 2nd century A.D. the population of Palmyra may well have reached around 150,000–200,000 individuals, without including the inhabitants of the

127) 2,000,000. The capacity in the 20th century (smaller than the ancient one) was around 1,000,000 m³ (Saliby 1990, 485).

⁸⁷⁹ Musil 1928, 147.

⁸⁸⁰ Meyer 2014 (forthcoming).

⁸⁸¹ Wirth 1971, 441.

⁸⁸² Jabbur 1995, 63; Wirth 1971, 441.

⁸⁸³ It is known from the Tax Law that small animals brought into the Palmyrene territory for the purpose of grazing. See also below.

⁸⁸⁴ According to Cato (*Agr.* 56), a slave doing hard manual labour needed 4 – 4 ½ *modii* (1 *modius* = 6.67 kg) of wheat a month dependent on the season. There is no difference between barley and wheat as to the contents of calories.

countryside.⁸⁸⁵ A more modest, and widely accepted, estimate is that Palmyra accommodated, for the same period, from 40,000 to 60,000 people in the city, with an additional population of 250,000 in the wider hinterland.⁸⁸⁶

As pointed out by Meyer, the following problem with this scenario is to understand from where the ancients got the necessary labour force. In fact, ploughing and sowing in the early winter months and harvest in May imply access to manpower. Even if larger nomadic groups did not enter the area from the south before the harvest, the fields also needed to be guarded, especially during the growth and ripening of the cereals. The water systems had to be maintained, and the water distributed to the fields. However, the requirement for a labour force, in this type of agriculture, is not constant through the year. From the harvest to the ploughing and sowing, the fields do not need much attention, whereas the harvest is the most labour-intensive period. A smaller, and more or less sedentary, population could have maintained and guarded the fields. It may be supposed also that the Harbaqa fort was installed there for this reason. As discussed already in chapter 3, it differs architectonically from the other fort, being dating to the 1st-2nd century A.D., and also it does not appear to be connected to any “coherent military system”. Extra manpower may have been recruited only for the harvest season. The owners of the fields could also have lived in Palmyra using tenants to take care of the most basic tasks, corresponding to the Roman *coloni* or the Arab *fellâhîn*. The tenants did not necessarily need to live close to the fields all the year. The most serious objection against this scenario is the absence of any traces, so far, of more complicated water systems from the Harbaqa dam to the plain, apart from the aqueduct leading to the Omayyad castle. Without further investigations both at the dam and on the plain below, the idea proposed by Meyer remains only a hypothesis.

To conclude it is possible to suggest, for the area under study, similar agricultural exploitation patterns, as those presented for the Northwest Palmyrena, for at least the first three centuries of modern era: with a rational management of the water resources, some farming, albeit limited,⁸⁸⁷ was possible.

A separate analysis is necessary to understand possible agricultural exploitation patterns in relation to forts present in the territory. As presented and discussed in chapter 3, the evidences lead to date them from the end of the 3rd century A.D. Therefore, the time frame considered stretches toward Late Antiquity.

⁸⁸⁵ Crouch 1972, 241-250. See also Matthews 1984, 170-171.

⁸⁸⁶ Savino 1999, 69-75.

⁸⁸⁷ Both geographically and temporary. In fact, annual rainfall variation could have contracted or augmented the agricultural possibilities.

4.4.1.1. Part-time soldiers, part-time farmers?

Establishing the impact of the late Roman army on the agricultural production, especially in the countryside, is a very challenging task due to the lack of evidences. In fact, as for the case of non-military settlements, no direct epigraphic or archaeological data connecting soldiers or specific forts to farming exploitations are available.

Poidebard wrote that along the greatest part of the route where the forts were located he had noted the existence of water points and farmed lands.⁸⁸⁸ However, we have to recalled that Poidebard's assertions have to be taken with cautions due to his preference to attribute to Romans most of the remains.⁸⁸⁹

Bauzou, who is one of the very few scholars to have surveyed the forts along the *Strata Diocletiana* speaks quite strongly against a possible agricultural exploitation around them. According to him farmed fields would have left archaeological traces that he did not observed, neither in the aerial photos. Moreover, the water installations available were not enough to be used for agricultural purposes. Water was sufficient only to water people and animals traveling along the route and for a daily use by the soldiers stationed there. It must be deduced that the soldiers who lived in the installations along the route endured a difficult life and depended on external supplies.⁸⁹⁰

It is undeniable that the Syrian climate deteriorated, more and more heading eastward and southeastward. Therefore the southern area of my study was probably drier than the north one and the efforts needed in order to exploit it more considerable. But, as seen above, in Roman time the situation was more favorable than in modern period without considering the soil degradation occurred due to livestock grazing.⁸⁹¹ Also, as pointed out by Calvet and Geyer too, the region of the Jabel Rawaq is not one of the driest, still receiving around 150 mm of annual rainfall.⁸⁹² It appears to me that agricultural situation may have not been so unconditional as suggested by Bauzou. First of all, a distinction is required among the fort of the "Strata". As already seen above, al-Bakhra's area (including al-Bazzurye and al-Sukkarye) can rely on a perennial spring and in a favorable hydrological position that probably lead to an agricultural exploitation already in

⁸⁸⁸ Poidebard 1934, 36-40; 42-50.

⁸⁸⁹ Cfr. Chap. 2 and Chap. 3. Introduction.

⁸⁹⁰ Bauzou 1989a, 367-368, 2000b 87-88. The Theodosian Code specifically refers to the transportation of supplies to *limitanei*, suggesting that this was a standard procedure in peacetime rather than just an emergency requirement to supply large expeditionary forces in wartime. *CTh.* 11.1.21, A.D. 385 on transport to *limitanei*; 11.1.11, A.D. 385 on transport of taxes in kind to frontier areas. Cfr. Also Pollard 2000, 22.

⁸⁹¹ Unfortunately it is not possible to establish the consistence of this land degradation also because not all scholars agree with this idea (Jaubert, Debaine 2000).

⁸⁹² Calvet, Geyer 1992, 93. However, when they analyze the function of the Khan al-Manquora and Khan al-Qattar water installations agreed with Bauzou to connect them to supply water only for daily personal use. For precipitation average cfr. Chap.1, Fig. 4.

Classical period. The *equites promoti indigenae*, installed there, definitely, since the Tetrarchic period, could have continued to directly cultivated those fields or in any case benefit from the products obtained if the land was left to work to the local population.⁸⁹³

Furthermore, Bauzou himself noted that the ancient name of Khan al-Hallabat, i.e. *Beriaraca/Ueriaraca*, could derive from the Aramaic: *bira* (well/water stop) + *iarag* (green) demonstrating the presence of crops in the surrounding area, as it is again in modern time.⁸⁹⁴

Examining the water resources of the forts (Table 2), it is clear that most of them could rely on the presence of a nearby *wadi*. Therefore, it is possible to suggest for some forts, at least a *wadi*-bed agricultural exploitation. Of course, in a limited extension.

Khan al-Qattar and Khan al-Manquora could rely also in a more complex water supply system. The reservoirs total surface of the latter one was around 4,300m². Lenoir hypothesized that the total capacity was not lower than 10,000 m³ or 1,000,000 liters of water.⁸⁹⁵

FORT	NATURAL SUPPLIES	SIMPLE INSTALLATIONS	MORE COMPLEX INSTALLATIONS
Khan al-Hallabat	<i>wadi</i>	3 wells	
Harbaqa fort	<i>wadi</i>		<i>qanat</i> (later probably connected with Qasr al-Heir al-Gharbi)
Khan al-Abyad		well	
Khan al-Qattar	<i>wadi</i>	<i>birket</i>	Dam on the <i>wadi</i> (before 3 rd century according to Calvet and Geyer) + derivation channel (late antiquity-connected with the fort)
Al-Basiri	<i>wadi</i>	wells + <i>birket</i>	<i>qanawat</i> (but later maybe late Antiquity or even Omayyad period)
Khan Aneybeh	-	3 birkets (large ones) + well	
Khan al-Manquora	<i>wadi</i>	At least 3 <i>birkets</i>	2 dams + derivation channels (For Calvet, Geyer it is unitary system connected to the fort; for Bauzou perhaps the first covered cistern upstream connected to an earlier stage of a route between the pass to Qaryatayn)
Al-Hamra	-	<i>birket</i> + well (?) + tank (?)	
Khan Al-Trab	At the confluence of 2 <i>wadis</i>	well + <i>birket</i>	
Khan Abou Shamat	-	<i>birket</i> + well	
Al- Bakhra	Artesian spring	Wells + aqueduct + derivation channel all connected with the spring	

Table 2. Fort's water supplies.

⁸⁹³ Bauzou 1989a, 336-337 = Bauzou 1993, 47, Inscr. L, Fig.7 = *AE* 1993, 1607 = *CIL*, III, 6726?. Cfr. Chap. 3.

⁸⁹⁴ Bauzou 1993, 45.

⁸⁹⁵ Lenoir 2011, 92. The valuation however has been done without knowing the exact depth of the reservoirs.

Besides being an archaeological issue, the question of the soldiers involved in agricultural exploitation, in Late Antiquity, is also a historical problem. Scholars have largely debated over the economic status of the *limitanei*, or frontier (*limes*) troops who manned military sites. The overall problem is, also, strictly connected with the concept of frontier (*limes*) and the role of forts in the Near East during Late Antiquity that will be explored in chapter 5. What will be traced here is the debate of whether the *limitanei* were involved in agricultural exploitation. This idea is based on a literary reference: in a novella of the *Codex Theodosianus*, dated to A.D. 443 and directed to *Nomus, magister officiorum*, the *limitanei* were expected to cultivate lands around their forts and their products were exempted from taxation, presumably, in order, to reduce their cost to the government.

«It is Our will that the fields of the borders (*agros limitaneos*) also, together with all the pastures and every right of ownership, which according to the ancient regulation the frontier soldiers (*limitanei milites*) themselves were accustomed to care for and to cultivate for their own profit, free from every compulsory public service, shall be held by them firmly and without any annoyance of extortion, if such fields are being cultivated by them at present time. If such fields should be possessed by other person, the prescription of any space of time whatever shall cease for all such holders, and it is Our will that such fields shall be vindicated to the aforesaid soldiers and shall be assigned to them without any burden at all of tax payment, as was anciently established».⁸⁹⁶

Here the agricultural role of the *limitanei* is not explicitly sanctioned, but it appears to have been established for some time. An excerpt from the *Historia Augusta* referring to “lands taken from the enemy he (Severus Alexander) gave to the dukes and soldiers (*limitaneis*) in the frontier districts stipulating that they would remain theirs if their heirs served in the army”, was used to prove that they were peasant soldiers as soon as they were created by Severus Alexander (A.D. 222-235).⁸⁹⁷ Since Mommsen, the *limitanei* have been therefore considered kind of “peasant militia, farmers who cultivated lands allotted to them by the government and performed guard duties in addition”.⁸⁹⁸

Isaac, in his masterly review of the literary evidences on *limitanei*, rightly concluded that there is no documentary evidence for *limitanei* actually farming until A.D. 443. In fact, the passage of the

⁸⁹⁶ *CTh. Nov.* 24.4.

⁸⁹⁷ *SHA Alex. Sev.* XVIII, 58,4.

⁸⁹⁸ Mommsen 1908, 456-465. Same in Poidebard 1934, 22; Van Berchem 1952, 15, 21 (introduced by Diocletian); Luttwak 1976, 170-173; Kennedy, Riley 1990, 39. However already Jones (1964, 649-653) questioned the argument that a transition of full time soldiers to part-time farmers occurred as easily as the first half of the fourth century.

Historia Augusta appears, due to the nature of the source itself, as a reflection of later practise.⁸⁹⁹ The term *limitanei* is first attested in A.D. 363, in a text, which applies to troops assigned to specific border regions (*limites*) under the command of duces.⁹⁰⁰ Moreover, 4th century edicts clearly show that the *limitanei* still depended on the imperial government for regular pay and for subsistence supplies.⁹⁰¹ In the light of all these considerations Isaac suggested that although some frontier soldiers were allowed to work their own lands in the 5th century, the *limitanei* of the Late Empire were not peasant farmers. Moreover, there is no evidence that this seriously affected their professional qualities or that they were tied down to the land or restricted to hereditary positions. It is consequently misleading to speak of a peasant militia as though this necessarily has qualitative implications.⁹⁰²

However, given the explicit literary testimony for farming by the *limitanei* by early 5th century, one may still wonder if there are any other evidences to support it, how extended and eventually when this practice began. Until recently, the issue of the character of the *limitanei* has never been examined from an archaeological point of view. In fact, researches in the sector on the Eastern Kerak Plateau (*Limes Arabicus* Project), east of the Dead Sea, provided new insights into the nature of the Roman frontier forces in Late Antiquity.⁹⁰³ This study represents also a valuable comparanda for the Southwest Palmyrena region, because the two areas have similar environmental features. Annual rainfall on the Kerak plateau generally averages 200-400 mm, well over the generally accepted minimum of 200 mm per year for dry farming. Nevertheless, the amount of precipitations drops rapidly when moving east toward the desert. Al-Lejjun, only 17 km from Kerak, receives *c.* 200 mm per annum. And al-Qatrana, 17 km east of al-Lejjun, *c.* 100 mm per year.⁹⁰⁴ All the sites excavated are in this dry steppe area, therefore presenting strong geoclimatical correspondence with the forts under study.

One of the main questions addressed by the archaeologist during the campaigns was if the *limitanei* located in the surveyed forts supported themselves, at least partially, through farming lands around their forts, between the 4th and 6th century. In order to provide an answer, systematic excavations on selected site have been carried out.⁹⁰⁵ Apart for the late Roman forts of al-Lejjun, the largest (4.6 ha) military site in this sector of the frontier, east of the Dead Sea, four smaller forts were also selected for excavation though more limited soundings. Two of the forts, Khirbet

⁸⁹⁹ Isaac 1988, 139-146.

⁹⁰⁰ *CTh.* 12.1.56

⁹⁰¹ Isaac 1988, 143 for a complete list of references.

⁹⁰² Isaac 1990, 146.

⁹⁰³ *Limes Arabicus* Project 1987, *Limes Arabicus* Project 2006.

⁹⁰⁴ Parker 2006, 12-13.

⁹⁰⁵ Richard, Parker 1987, Bloom, Parker 1987, Clark 1987.

al-Fityan (0.6 ha) and Rujm Beni Yasser (c. 32 x 26 m), were closely linked to the legionary fort of al-Lejjun but two other forts, Qasr Bshir and Daʿjaniya (1 ha), were located some at distance from it and presumably garrisoned by independent auxiliary units. Of most interest is the fort of Qasr Bshir, due to its several similarities with some of the fort considered in my area. Firstly the architecture: square structure with projecting tower at the corners as Khan al-Trab, Khan Abou Shamat and Khan Aneybeh. Second the dimension: it covers an area of 0.25 ha similar to that of Abou Shamat and Khan al-Hallabat. Third, the date of construction: as the forts of the “*Strata*” an inscription attests that it was built in the Tetrarchic period (A.D. 293-306).⁹⁰⁶ Water supply was guaranteed by cisterns (two inside the forts) and a large *birket* (3,040 m²) 1 km west of the fort.⁹⁰⁷ Fourth, aerial photos of this site and its surrounding area do not show any clear evidence for any agricultural exploitation, as it appears to be the case of the forts in the Southwest Palmyrena.⁹⁰⁸

A detailed analysis of botanical remains has been carried out by Crawford while archaeofaunal evidences by Toplyn.⁹⁰⁹ The results from the latter will be presented in the following paragraph.

The floral remains, consisting mainly in seeds or other plant parts preserved in charred or carbonized form, have been used specifically to provide information on subsistence and environment during the Late Antiquity occupation of these sites. The cultivated plants present at project sites included cereal grasses (wheat and barley), legumes/pulses (lentil, vetch, and/or pea), and fruits (olive, date, grape, fig, and peach). With the exception of date and peach, remains of these plants were found in every period of occupation at al-Lejjun. The much smaller samples from Qasr Bshir yielded grains of barley, rachis fragments of both wheat and barley, lentils, grapes and possible date pits. From Daʿjaniya came grains of wheat and barley, lentils, vetch, dates, olives and figs from Late Roman/Early Byzantine contexts. The absence of few cultigens at Qasr Bshir and Daʿjaniya that were found at Lejjun is probably best explained by the much smaller forts rather than significant differences in plant utilization or environment.⁹¹⁰

Crawford points out that the analysis of cultivated plants remains found at project sites indicate diversity in the vegetable diet in all periods of occupation, with little variation among periods. Barley was the most frequent occurring cereal on the sites in all period of occupation. Debris from barley processing in the form of rachis internode was also common. This suggests that barley was cultivated and processed locally and that both the grain and the chaff were used as fodder for livestock. Wheat grains, on the other hand, did not occur with great frequency but processing

⁹⁰⁶ *CIL*, III, 14149. The ancient name of the fort was *Praetorium Mobeni*.

⁹⁰⁷ Cfr. Clark 1987, Lenoir 2011, 128-130.

⁹⁰⁸ Cfr. Qasr Bshir Google Earth images with for example Poidebard 1934, Pl. XXIII (Khan al-Manquora) and XL (Khan al-Hallabat).

⁹⁰⁹ Crawford 2006, Toplyn 2006.

⁹¹⁰ Crawford 2006, 454-456.

debris in form of rachis internodes was relatively common. This pattern of residue suggests that wheat too was cultivated locally for human consumption. The debris from wheat processing was probably used to feed animals or in domestic contexts. Although lentils, as well as peas and/or vetch, were present in all periods; there was no evidence for the local production of legume crops.⁹¹¹

Local production of olives is supported by the presence of charred cuttings or prunings in debris from hearts. The six-to-seven-year investment needed to plant and establish fruiting olive trees might have limited olive and wine cultivation in a small scale. The absence of processing installations for olives and grapes may also indicate that the production, if local, was not sufficient for oil or wine production but limited to quantities sufficient for table consumption as fruit. A similar case may be argued for other attested fruits: figs and dates could be grown nearby but there was no evidence for local production.

Examination of weed species present around al-Lejjun also supports the picture of local cultivation in a context of a dry environment with seasonal precipitation providing moisture for cereal crops and possible limited irrigation to support fruits production such as olive and grape. A decrease in the diversity of weed species from the Late Roman to the Late Byzantine period suggests environmental stress and degradation over time, possibly from overgrazing and intensification of cropping within the catchment area of the site. A natural dry trend may also be responsible for the change in the pattern and diversity of weed species.⁹¹²

To conclude, botanical (and faunal) remains analyzed from the four-sampled forts from the *Limes Arabicus*, suggest significant local production of foodstuff. What remains unclear is the degree of self-sufficiency of these forts. It seems more likely that local sources of production were all the time supplemented by imported supplies, including grain collected in kind as *annona* and transported to the forts from surrounding regions.⁹¹³ Nevertheless, archaeological evidence from these sites strongly suggests that the lands of the *limitanei* were producing significant quantities of food throughout the 4th, 5th, and early 6th century, probably from the Diocletian period onward.⁹¹⁴ It remains possible, of course, that the military lands were leased by soldiers and thus worked by others. But, in either instance, the evidence suggests significant food production from the territory of the forts.

⁹¹¹ Crawford 2006, 458-460.

⁹¹² Crawford 2006, 458-461; Parker 2006, 553-557.

⁹¹³ Cfr. Whately 2013, 912-913.

⁹¹⁴ Parker 2006, 556-558. Recently Whately (2013) uses Parker's own evidence to question his interpretation of signs of abandonment and decline from the outset of the 6th century arguing that sites such as al-Lejjun continued to serve a military function into the mid-6th century.

In the light of all the considerations and results presented, it may be supposed a similar agricultural exploitation pattern for the area under study. In few words, there is a high chance that, through judicious use of the little water available, at least a limited amount of agriculture was practiced also around the fort of the Southwest Palmyrena in order to provide a minimum degree of food self-sufficiency for the garrisons.⁹¹⁵ Of course, without further investigations, this remains only a hypothesis.

4.4.2. Pastoralism

This paragraph aims to analyze pastoralism as an adapted economic strategy to exploit the natural resources available and the archaeological and historical evidence for nomadic pastoralists.⁹¹⁶ Within the same economic aspect it will be traced also the relationship between pastoral nomads and sedentary farming population. The “political” aspect will be explored instead in chapter 5 as a matter of frontier security.

Below an annual average of 250 mm of rainfall, as it has been seen, farming becomes very difficult and limited, but livestock raising is likely to have been the dominant economy of marginal zone because it provides more security than fixed-place agriculture.

Mobile or nomadic pastoralism was, and still is, one of the mainstays of the economy of people who exploited the land of the Syrian steppe, but herders rarely relied exclusively on pastoralism as a means of support. Food-production strategies usually involved a mix of subsistence options. Pastoralists often forage for wild plant resources, hunt wild animals (gazelles and other ungulates) and seasonally cultivated. Similarly, agricultural settled population keep livestock, collected wild plants, and hunt. Pure pastoral nomadism without cultivation as a supplementary economical activity was not only rare but also a later development.⁹¹⁷

However, for pastoral nomads control and breeding of animals was a year-round occupation and cultivation played a very insignificant role. Methods of keeping and breeding of domestic animals can fall into two basic classes: extensive and intensive husbandry. Intensive husbandry involves a strategy in which humans not only control the animals involved but also procure or produce the forage resource that animals consume. Intensive husbandry practices are predominately, but not exclusively, associated with sedentary agricultural population. Extensive husbandry relates to pastoral strategies in which humans control the animals involved, but regulate their feeding by

⁹¹⁵ Cfr. Lewin 2011, 244 n. 37.

⁹¹⁶ The concept of pastoral nomadism itself is itself a complex and long debated concept, depending if considered from an historical, anthropological, cultural and economical point of view (*Nomads, tribes, and State in ANE 2009*).

⁹¹⁷ Khazanov 1994, Khazanov 2009, Szuchmann 2009.

moving herds, usually of sheep and goats, to available forage regions. Mobility is therefore an essential component of extensive pastoralism practice. The two systems are not mutually exclusive. Various combinations of the two strategies were sometimes practised on seasonal basis, i.e. what is often called transhumance in anthropological literature, where the herds are moved few days' walk to reach seasonally suitable pastures.⁹¹⁸

Animal husbandry in the Syrian steppe must have involved mainly seasonal (cycling) movements in and out of the more marginal zones: Rowton's "enclosed nomadism".⁹¹⁹ Of course, opportunistically presence of shepherd grazing in the area or occasional penetration of a group into or through the region occurred too. Due to environmental conditions of the semi-arid Syrian steppe, i.e. vegetation consisting mostly of salt-tolerant perennial shrubs, with a spring bloom of grasses and flowering plants and few permanent water sources, but winter floods fill rainpools in the *wadis* which may hold water well into the dry season, the amount of water and grazing varies greatly each year. Sheep and goats, the principal animals raised by pastoralists in the Syrian steppe, differ in their feeding habits and responses to adverse conditions. Sheep prefer to graze annuals, although they will browse, while goats prefer to browse shrubs, although they also graze. Thus goats fare better than sheep in spring, while goats are better adapted to more extended seasonal use from the autumn dew-fed perennial growth through to the drying of perennial vegetation early summer. Goats are generally more tolerant than sheep of extreme of heat and drought, although they are more susceptible to cold and wet. In cold, wet weather goats are usually penned at night, and grazed on sheltered slopes.

Herd management in a dry steppe was regulated by the flock's needs that must have access to both grazing and water, which do not necessarily occur together. The normal grazing range for sheep and goats is around 10 km a day, but when not grazing, herds can be moved up to 40 km to the new source of water and pasture. On average, in the winter month the distanced between grazing and rainpools will be less, than this, over a fairly extensive part of the Syrian steppe, permitting fairly unrestricted access for herders along the *wadis* systems. In poor years it would be more difficult, and in the summer months almost impossible, to maintain more than a very small herd of animal close to a permanent or semi-permanent water source.⁹²⁰ Due to the lack of data it is not possible to establish the annual cycle of herders in the Syrian steppe, but given the nature of the environment, and the requirements of the flocks, there must have been a seasonal cycle involving penetration into the deep steppe in winter and spring, and a retreat to a verdant fringes, or to oases

⁹¹⁸ Betts, Russel 2000, 24-25.

⁹¹⁹ Rowton 1976.

⁹²⁰ Arbuckle 2012, 203-207; Betts, Russel 2000, 30-32; Khazanov 2008, 123; Toplyn 2006, 498-499.

and permanent water sources, during summer months. This move was in most cases linked to agricultural cycle, so that the flocks could be grazed on the stubble after harvest at the same time fertilizing field with their manure (Fig. 4.23).⁹²¹

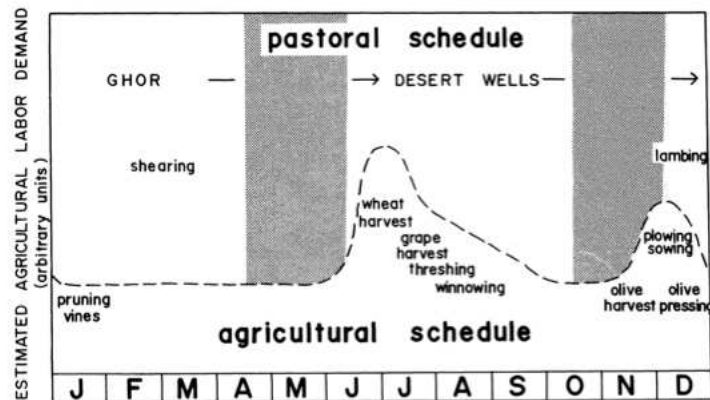


Fig. 4.23. Agricultural and pastoral activities scheduled by months.
(Banning 1986, 43 Fig. 11)

For what it concerns the relationship between pastoral nomads and settled farmer population, this should not be seen as a permanent social conflict but instead as two modes of economic subsistence intimately connected. In fact, since pastoral nomadism was characterized by constant natural instability, being based on a balance between three variable, i.e. the availability of natural resources (such as vegetation and water), the number of livestock and the size of the population, all of which were constantly oscillating, has never been self-sufficient. Pastoral nomads therefore needed sedentary farming and urban societies for their efficient functioning and their very existence. Farming population supplied pastoralists with flour, barley and/or wheat, pulses, poultry, and various products of handicraft. On the other hands, pastoralists provided settled population raw materials, animals products, for example wool, milk products, meat animal fat, beast of burden, in addition to their labor at the harvest and for plowing and transportation of removable resources (possibly salt too) and commodities between communities. Cooperation with settled population may have also included the employment of the nomads as mercenaries, guards or guides involved on a long distance trade as in the case of Palmyra's commercial activities.⁹²²

⁹²¹ Banning 1986; Parker 1987.

⁹²² Isaac 1993, 109-111 (these social actors interacted in what can be considered an open frontier); Khazanov 2008, 119-121; Sommer 2012, 14-19; Smith 2013, 49; Meyer 2014 (forthcoming). Pastoral nomads may have aided with the harvest, in exchange for part of the yield and the right to have their flocks graze on the stubble afterward, leaving their dropping fertilizer for the next crop.

Identifying remains of pastoral presences presents special challenges to archaeologists because of the nature of their mobile lifestyle, what scholars call the problem of visibility.⁹²³

For example the construction of various types of huts and other forms of temporary and permanent shelters from a range of raw materials (mudbrick, stone, wood, brush, mats, reed, etc.) is common among many nomadic peoples, both pastoralists and hunter-gatherers.

Therefore, the “archaeology of mobility” requires specialized approach, combining the study of ephemeral campsites and low-density surface scatters with data on the environment, the available resources, and the route of the nomads. New archaeological tools and techniques such as Google Earth, GIS, chemical fingerprinting and residue analysis, and techniques adapted from other disciplines surely represent useful tools for such studies.⁹²⁴

It has only been in the last couple of decades that pastoral campsites have started to be studied. A long-term analysis has been carried out for example by Rosen for the Negev area and by Barnard for the region between the Nile and the Red Sea.⁹²⁵ In the Southwest Palmyrena such studies have not yet been carried out. However, connected to animal husbandry practice, there is a possibility that the numerous structures called desert kites, surveyed in the area under study by the archaeological mission of Prof. Morandi Bonacossi and Cremaschi and through satellite images by Kennedy,⁹²⁶ could have been multifunctional: primarily used as hunting traps for gazelles and other large ungulates, they may have served as enclosures for keeping herds of sheep and goats. Some of them, despite their appearance already from Pottery Neolithic period (c. 5500 B.C.) show continual reuse until modern time (Roman period included).⁹²⁷

Fortunately, it is possible to draw some information from epigraphic sources. Again, the Palmyra Tax Law provides useful data on animal herding in the territory and on the importance of transhumance in the region. A variety of animals is mentioned (Table 3), which included both pack (camel, donkey and mule)⁹²⁸ and food (sheep and lamb) animals. Strangely, goats are not cited. They may have been included in a part of the missing text. In any case there is an implicit reference: goats skins, along with alabaster vessels, are the containers used to carry goods (Table 1). Moreover, as well as most of the other animals in the Tax Law, goats are also attested by

⁹²³ Desert campsites and rock shelters may have been removed by natural forces such as erosion or show re-occupation in several periods, some even up to recent times.

⁹²⁴ Barnard 2009, 22-23.

⁹²⁵ Rosen 2009 and Barnard 2009.

⁹²⁶ Morandi, Iamoni 2012, 36-45; Kennedy 2012, 152-154, who defined some of them as belonging to a new type called “sock kites”.

⁹²⁷ Morandi Bonacossi, Iamoni 2012, 45.

⁹²⁸ Perhaps also horses (Matthews 1984, 177). A discussion over camel, donkey and horses as burden animals and their breeding requirements will be presented in chap. 5.

iconographic evidences, i.e. Palmyrene *tesserae*.⁹²⁹ Secondary products as animal fat and skins are also listed (Table 1). Only imported (Italian) wool is mentioned which been recovered in funerary context together with local woolen remains.⁹³⁰ However, it is very likely that local one was also produced. Pastoralism and sheep herding are linked also to leather, and other industries making use of skins which we know were used at least for making rafts, as attested both in the Tax Law and in an inscription from A.D. 257/258 relating to *askonautopoi* or raft-makers of Palmyra.⁹³¹

ANIMAL		LOADED	UNLOADED	TAX (EACH)	GREEK	PALMYRENE
camel		x	X	1 D	92-93 NL 194-197 OL	61-62 NL 118-119 OL
mule				10 D	-	39 NL
lamb		x	x	1 A	-	42 NL
Sheep (imported from outside) ⁹³²				??		145-147 OL
Butchered animals ⁹³³				??? (Italian A)	181-182 OL	102-103 OL

Table 3. Animals listed in the Tax Law.

A clear will of promoting local animal exchange (whether for food or secondary products supply), as it was the case of agriculture produces, is attested by tax free import of animals for slaughter rejected on account of natural death and sheep brought for sharing.⁹³⁴ Of special interest is the entry about grazing rights in the old law:⁹³⁵

«It has been agreed that payment for grazing rights is not to be exacted [in addition to the normal?] taxes; but for animals brought into Palmyrene territory for the purpose of grazing, the payment is due. The tax collector may have the animals branded, if he wishes».

Even if there is a lacuna in the Greek text, and the lines before are too fragmentary to give any meaning, the general contents of the paragraph is clear. There is a tax on grazing rights (*ἔννομος*) for animals brought into Palmyrene territory and the tax collector may have the animals branded.

⁹²⁹ Hoffmann-Salz (2011, 427-429) has collected epigraphical, iconographical and archaeological evidences also for animals' herding. For the *corpus* of *tesserae*: du Mesnil du Buisson 1944; Ingholt, Seyrig, Starcky 1955.

⁹³⁰ Schmidt-Colinet 1995a; Stauffer 1996.

⁹³¹ Tax Law, G. 81: σκυτικῶν = shoe maker (Matthews 1984, 177 n. 19). For the *askonautopoi*: *IGLS* XVII, 59. Cfr. also Seyrig 1963, 159-151.

⁹³² Tax is not liable if they are imported to be shorn.

⁹³³ In case of animals rejected on account of natural death, the tax is not payable (G. 185-186/P. 108).

⁹³⁴ See n. 393 for sheep; n. 393 for butchered animals.

⁹³⁵ G. 233-237: Ἐννόμιον συνεφωνήθη μὴ δεῖν πράσσει[ν εκτος των] τελων· [των δε επι νομην μεταγομένων [εις Παλ]μυρηνην θρεμμάτων οφείλεσθαι· χαρα[κτη]ρίσασθαι τα θρέμματα εαν θέλη ὁ δη.μο[σιώνης,] ἐξέστω.

This is separated from other grazing rights, which were not liable to the same tax or perhaps even immune from taxation. The Aramaic version is almost identical, even if the text is fragmentary.⁹³⁶

Apart for protecting local herding economy, this entry testifies at the same time that the territory was not only exploited by Palmyrene families but also by pastoral nomads entering the grazing fields probably on seasonal base.⁹³⁷ Meyer has suggested that the small forts and similar installations recovered by the Norwegian mission in the Northwest Palmyrena, could be seen as multi-purpose centres for control and tax farming.⁹³⁸ They controlled the territory, access to some important water resources, lines of communication, not only for the caravans but also for the movement of livestock, preventing at the same time possible conflicts. In fact, small disputes between the inhabitants of the villages or the owners of estates and the nomads, and also between different nomadic groups must have been a common phenomenon. They could have been also centers for tax farming. The collecting of taxes on grazing rights, the branding of animals⁹³⁹ and control of the groups liable to this tax, may have happened there.

Some of the nomads entering Palmyrene territory have belonged to the Safaitic speaking group who has left over 20,000 inscriptions or graffiti in Southern Syria, Northeastern Jordan and North and Northwestern Saudi Arabia, datable roughly from the 1st century B.C. to the 4th century AD.⁹⁴⁰ They testify to a nomadic strategy of survival with seasonal movements to new pastures, control of water resources and occasional raiding, also of caravans.⁹⁴¹ A few, found far away from agricultural districts, mention the sowing of seed and at least two show drawings of ploughing.⁹⁴² They testify that a mix economical strategy, as the one mentioned above, was practised among nomads in the Palmyrene territory.

A collateral issue is the question of meat subsistence for soldiers leaving in the forts. For the Southwest Palmyrena the only possible archaeological evidence for animal husbandry engaged by soldiers comes from al-Bakhra. North and North-West of the fort, there are simple gardens organized in rectangular enclosures of 20-30 m per side; located next to each other and closed by walls; following roughly the same alignment as the fort. Genequand has suggested that these enclosures were not intended for cultivation but probably for penning cattle. They might

⁹³⁶ P. 149: [s]pwn mks' [...] 'hyk bnmws' dnr yhw' mtgb' [p] mn[...] mdy pr' mks' l' yhw' mtgb' 'l' l'n dy thw' m' 'l' l[...thw]m tdmr 'n ysb' mks' yhw' [...] 'lh.

⁹³⁷ Cfr. Matthews 1984, 173; Hauser 2012, 220.

⁹³⁸ Meyer 2014 (forthcoming). Cfr. Also Schlumberger 1951.

⁹³⁹ As remarked in the Tax Law: "the tax collector may have the animals branded, if he wishes" (G. 235-237; P. 149).

⁹⁴⁰ For a short introduction with bibliography: MacDonald 1993. See also Macdonald 2009. A new online database at the University of Oxford, *Ancient Arabia: Languages and Cultures project at the Khalili Research Centre*, has given easy access with search engine to over 3400 graffiti with photos and translation. <http://krcfm.orient.ox.ac.uk/fmi/iwp/cgi?-db=AALC_BDRS&-loadframes> (consulted 30.06.2013).

⁹⁴¹ KRS 117, 169, 3249, 1542, 1812 in the database.

⁹⁴² KRS 1861 in the database.

correspond with the use of the Roman fort by a cavalry unit, which would have to pen numerous horses, or with a later and more agricultural settlement partly directed towards the breeding of cattle or horses.⁹⁴³ In any case, these structures are not dated.

The modern name of *Beriaraca/Ueriaraca* may also be considered as indirect evidence to pastoral fields. *Bauzou* explained the toponym Khan al- Hallabat as a plural from the root *halib* (milk). The term is interpreted as “the place where the cattle are milked”. Other names coming from the same root (Halab, Halabiyeh...) are very frequent in the Middle East and already existed in the Pre-Classical antiquity (as the case of Halab). They could as well refer to the white color or to pastoralism.⁹⁴⁴

In order to suggest possible patterns for the logistics of livestock procurement and meat provisioning in late antique forts, the results acquired within the *Limes Arabicus* Project, can offer again a good comparanda. As well as for agriculture, it appears that the soldiers were able to maintain an economy of semi-autonomy also concerning meat assumption. Indeed, the analysis of the archaeofaunal remains, primarily animals bones, carried out by Topleyn testify that sheep and goats were clearly the most important domesticated animals present in the faunal record from all excavated sites and that they were most probably bred locally. These animals were also exploited for their milk, hair and meat. In sharp contrast to caprines, only small numbers of cattle bones were found at al-Lejjun, a mere handful at Qasr Bshir, and none at the other excavated sites (Khirbet al-Fityan, Rujm Beni Yasser and Da‘janiya). Their relative scarcity can maybe partly explained by lack of adequate local pasture. In fact, cattle require different modes of herding and access to water and forage than do sheep and goats.⁹⁴⁵ In any case they were raised and managed locally as well and appear to have been used largely as draft animals in local agriculture, then slaughtered for their meat and hides when their working days were over. The Roman soldiers also raised some pigs for their meat only as a minor supplementary protein source. Chickens were the second most common domestic faunal species. As pigs, however, they represented a low-cost, efficient protein supplement that was not labor-intensive and required only a limited space within these forts. The faunal evidence also reveals that hunting practice (gazelles and hares) made practically no contribution to local diet. Further analysis of charred deposits showed that animals dung was also the main source of fuel in all periods of occupation of these forts and was used to fertilize fields. This subsistence pattern held true for the whole Late Antiquity period with two

⁹⁴³ Genequand 2004a, 239.

⁹⁴⁴ Bauzou 1993, 44-45.

⁹⁴⁵ Arbuckle 2012, 203-207; Bett, Russel 2000, 30-32.

notable exceptions: skeletal evidence suggests that by the 6th century A.D. goats and cattle were exploited for the production of dairy products.⁹⁴⁶

As well as for agriculture produces, similar patterns of exploitation to those traced for the Kerak Plateau forts, can be only suggested for the area under study. In any case, the importance of Southwest Palmyrena for pastoral nomadism's transhumance seems to be confirmed also by late literary evidence. Indeed, in the middle of the 6th century A.D. Procopius writes:

«Now this country, which at that time was claimed by both tribes of Saracens, is called Strata, and extends to the south of the city of Palmyra; nowhere does it produce a single tree or any of the useful growth of cornlands, for it is burned exceedingly dry by the sun, but from of old it has been devoted to the pasturage of some few flocks. Now Arethas maintained that the place belonged to the Romans, proving his assertion by the name which has long been applied to it by all (for strata signifies 'a paved road' in the Latin tongue), and he also adduced testimonies of men of the oldest times».⁹⁴⁷

4.4.3. Conclusions

In drier regions, as the Southwest Palmyrena, land could be agriculturally exploited in a limited amount through irrigation projects but livestock raising it is likely to have been the dominant economy. In fact, drought or minor fluctuations in climate could have devastating effects on these communities. Therefore, the economic subsistence pattern of these settlements never rested solely on agriculture but combined with pastoralism in a mix economy. The two modes of production were combined in an interacting system that successfully exploited region's resources. Unfortunately, the extent of their interaction in these areas cannot be ascertained accurately, since the evidence remains fragmentary and sparse.

To conclude, there was a clear economic dependence of Palmyra on its territory, surely at least for the first three centuries A.D. The importance of the exploitation of the hinterland, both in term of natural resources, agriculture and pastoralism, has been only recently firmly pointed out from an historical and archaeological point of view. Without denying that the economy of Roman Palmyra was based on caravan long-distance trade, the evidences suggest that the countryside actively integrated and supported it.⁹⁴⁸ This idea was already suggested in the 1930s by Seyrig:

⁹⁴⁶ Toplyn 2006. See also Parker 2006, 554-556.

⁹⁴⁷ The dispute was between the Arab tribes allied to Rome and those under the leadership of al-Mundhir (Alamoundaras) allied to Persia. Procop, *De bellis* 2.1.1-8 (c. A.D. 535). Translation from Dodgeon, Lieu 1991, 120.

⁹⁴⁸ Meyer 2014 (forthcoming), Smith 2013, 40-50; Sommer 2005b, 2012; Yon 2002, 127;

«En réalité, Palmyre est au milieu d'une oasis qui était plus considérable autrefois qu'aujourd'hui, et cette oasis n'est pas au milieu d'un désert, mais d'une steppe, qui se laisserait cultiver si elle était irriguée, et qui produit malgré tout, avec les quelques ondées qu'elle reçoit en hiver, une pâture suffisante pour de nombreux troupeaux de moutons et de chèvres. De plus certains points de la contrée aujourd'hui stérile qui s'étend à l'ouest de Palmyre avaient été aménagés avec grand soin dans l'antiquité, et des systèmes de barrage, établis jusque dans la montagne, y captaient les torrents hivernaux en vue d'une irrigation prolongée. Il y avait donc dans le pays, et alentour de la ville même, une population de cultivateurs et de petits éleveurs, moins considérable que celle des marchands et des caravaniers, mais qui avait son importance, et sur qui reposait notamment en grande partie la charge de nourrir la ville».⁹⁴⁹

⁹⁴⁹ Seyrig 1933b, 269.

Chap. 5. Connectivity

5.1. Introduction: the road system

The appropriation of an earth's surface portion, its transformation into “territory”, takes place when this space is feasible and can be crossed from side to side, when it is possible to move inside and along its borders through a path, a road or a route. The roads were indeed the decisive and fundamental element for defining and understanding the territory in its full extension.⁹⁵⁰ They were from time to time an instrument of territorial control and communication but also for promoting urbanism and economy. In fact, the road system was fundamental in the extensive settlement and development of rural landscapes throughout the empire. Roads also increased the scale and effectiveness of trade (both local and long distance) and tax-collection. In fact, from the third century the system was also designed to help supply provisions to the army: taxes collected in kind could be delivered to specific depots within the system.⁹⁵¹

Several international projects and supporting digital tools dealing with topics on geographical knowledge, travel (both overland and maritime) and connectivity in the Roman world have appeared in the last years.⁹⁵² For what it concerns the area of study, the research project on *Networks in the Roman East* (NeRoNE) deserves to be cited.⁹⁵³ In any case, much will have depended, also, on contingent factors such as the physical condition of the people traveling, the state of the roads, the weather, the time of the year and hours of daylight, and the motivation of the journey. Specific studies on Roman roads in Syria have been very few. Poidebard's work, helped in some cases by the epigraphist Mouterde, even with all the related problems, still remains fundamental.⁹⁵⁴ A more recent and scientific study is the already many times mentioned, but

⁹⁵⁰ Magnani 2014 (forthcoming).

⁹⁵¹ Butcher 2003, 130; Hitchner 2012, 225.

⁹⁵² An important project on travel and related issue (roads available, costs, speeds etc) is the *Geospatial Network Model of the Roman World (ORBIS)* of the University of Stanford: <http://orbis.stanford.edu/#applying> (consulted 11.10.2013). Many different project are carried out by the Ancient World Mapping center of the University of North Carolina at Chapel Hill: <http://awmc.unc.edu/wordpress/research> (consulted 11.10.2013). See also the *Digital Atlas of the Roman Empire* (DARE): <http://imperium.ahlfeldt.se/>) and *Digital Atlas of Roman and Medioeval Civilization* of Harvard University (DARMC): <http://darmac.harvard.edu/icb/icb.do?keyword=k40248&pageid=icb.page188868> ecc.

⁹⁵³ The project, coordinated by Eivind Seland, is funded under the Research Council of Norway's SAMKUL initiative, and hosted by the Department of archaeology, history, cultural studies and religion, University of Bergen, Norway:

<http://www.forskningsradet.no/servlet/Satellite?c=Prosjekt&cid=1253982533812&pagename=samkul/Hovedsidemal&p=1253964329653> (consulted 21.12.2013). Cfr. also <http://neroneproject.blogspot.de> (consulted 11.10.2013).

⁹⁵⁴ Mouterde 1930-1931, Mouterde, Poidebard 1931; Mouterde, Poidebard 1945; Poidebard 1934, Poidebard 1939a. Cfr. also chapter 2.

unpublished, work of Bauzou.⁹⁵⁵ For, insomuch it concerns milestones, the best catalog, available, is still Thomsen's one.⁹⁵⁶ Volume XVII of the *CIL* is dedicated to the collection and publication of milestones, recovered within the Roman Empire, however no tome seems to be in working progress for Syria.⁹⁵⁷

Three principal types of roads can be found in Roman Syria:

- The most elaborate form was that found in or close to cities and towns, or in difficult passages such as marshy or rocky terrain where the surface was paved with large stones slabs. This is the case, at least for a stretch, for the road recovered by Italian Geoarchaeological mission west of Palmyra.
- Most roads between the cities were either paved with gravel, or had dirt surfaces (second type). Gravel-paved roads were generally between 4 and 7 m wide. Their upper surface consisted of a layer of clayey soil mixed with gravel, which lay over a layer of small, densely-packed stones about 20 cm thick. Along both edges of this structure ran a retaining line of stones, and a third line ran along the centre of the road. This appears to be the structure of the main roads in the northern Syrian, Hauran and Arabia (*via Nova Traiana*).
- The third and simplest form of road had only a plain dirt surface. Stones were cleared to the sides of the track to form low retaining walls. Because of their simple construction, such roads are often not very visible, today, at ground level but can be seen “easily” from the air. Dirt tracks were especially common among minor roads in the steppe or desert, but it could include some major highways such as the *Strata Diocletiana*.⁹⁵⁸

In all cases, roads needed to be maintained over long periods. Heavy rains, *wadis*' debris, eolic sedimentation and so on could undermine their normal function. Therefore, repairs of different types were frequently necessary, as attested from many milestones along the road to *Epiphaneia-Antiochia* and along the *Strata Diocletiana*.

Any reconstruction of the chronological development of the road network depends most of the time on milestones' inscriptions. However, the course of road was not invariably marked by milestones, nor signaling distances through stone marks was a Roman “invention”.⁹⁵⁹ In certain places the milestones, or their inscriptions, may have been made of a material, which has not

⁹⁵⁵ Bauzou 1989a, 1989b, 1993.

⁹⁵⁶ Thomsen 1917.

⁹⁵⁷ http://cil.bbaw.de/cil_en/dateien/jahresbericht.html#meilensteine (consulted 14.10.2013)

⁹⁵⁸ According to Bauzou 1989b, 213-216. See also Butcher 127-128; Chevallier 1997, 104-118, 244-258; Hammad 2010, 130-144; Kennedy 1990, 77-78; Poidebard 1934, 165-167 (who actually divided between fully paved roads, unsurfaced road-the third type listed- and caravan tracks).

⁹⁵⁹ Such markers were already found along Assirian and Persian highways (Talbert 2012, 235 n. 3).

survived. In fact, few milestones from Arabia and Judea provide the only evidence of anepigraphic milestones with purely painted texts. They date from the reign of Maximinus Thrax to Constantine.⁹⁶⁰

Also it may be asked whether the erection of dated milestones reflects the actual construction of the road system or just a development of it. It is conceivable that Roman authorities decided to set up milestones long after that they started traveling along it. Most of the time, roads were not created *ex novo* but using older routes, rearranged in order to be more functional. Therefore, erecting milestones and perhaps equipping the road with facilities, may be intended as a matter of “monumentalization” of the route that, especially in some areas of the Near East, already existed as transhumant itineraries in the region before coming of Rome. Moreover, milestones sometimes record repairs but give us no indication of the date of the original construction.

By definition, milestones should appear every mile along the major roads of the Roman Empire in order to help the travelers know how far they are from their destination and point of departure (*capita viae*). Providing indication of the distances, they rhythmically marked the space, organizing it in itineraries, splitting the way into segments: in substance, they assessed the possession, organization and control of the space by a central power.⁹⁶¹ Indeed, the stones, typically columnar, between 2 and 3 m in height, bear additional form of communication. Most, if not all, milestones mention the name of a Roman emperor and in many cases an action associated with the maintenance of the road itself, but often refer to specific actions of repair or improvement (for example: *refecit, curavit, restituit*). This is the case for most of those along the road to *Ephiphaneia*. Hence, the milestones could also be seen as means of ideological intention and propaganda by the emperor.⁹⁶²

From this point of view, scholars have questioned their understanding by a local population because they were inscribed in Latin whereas, in the eastern provinces, the population spoke Aramaic (the Palmyrene is a dialect) and Greek. Therefore, Isaac has assumed that they were meant to be read by soldiers, since they were the most substantial group of Latin’s users in these provinces and those by whom and for whom the roads were constructed in the first place. It was, in other words, a matter of political propaganda to assure loyalty from the troops to the present emperor.⁹⁶³ While roads may have been primarily designed for military purposes, at the same time, they also made travel relatively safe and easy for people.

⁹⁶⁰ Graf 1995, 418-421; Graf 1997, 125; Butcher 2003, 128.

⁹⁶¹ Magnani 2014 (forthcoming).

⁹⁶² Isaac 1990, 304-309; Laurence 2004, 44-47; Bru 2011, 20-21; Talbert 2012, 236; Magnani 2014 (forthcoming).

⁹⁶³ Isaac 1990, 305.

Furthermore, this idea underestimates the nature of “bilingualism” in the region. Apart for the fact that, even not all part of the troops, were able to speak Latin, surely other local people were able to understand it, such as merchants. In fact, many inscriptions from Palmyra are trilingual (Palmyrene, Greek and Latin) and not all of them deal with soldiers. It has to be noticed however, that since the 3rd century A.D. Latin disappeared completely.⁹⁶⁴

Also the name of the emperor, though written in Latin, accompanied by the usual abbreviations, was always recognisable since it was present everywhere, from coins to statues’ basements, and to plaques affixed on buildings. Even those who were not able to read could not escape, principally, the indication of distances and the authorship of the work.⁹⁶⁵

Milestones of Late Antiquity rarely mentioned any actual form of work undertaken by a specific emperor. The nature of the inscriptions changed after the Severan emperors. Previously, the texts referred to a specific action by the emperor in terms of road improvement: paving, repair of old and collapsed structures or simple restoration. After Caracalla, the texts are usually expressed in the dative and dedicated to current emperors. It is still a matter of imperial propaganda because, by the association of the milestones set up at the same point on the road system, the current emperor could connected himself to the ancient period of prosperity. The perfect example of these changes is represented by the case of the *Strata Diocletiana*’s milestones.

Studies have proved a decrease (not similar everywhere) in the number of surviving inscribed milestones from the late fourth century and almost disappearance of the phenomenon in the fifth.⁹⁶⁶ Of course some roads could have fallen in disuse, for many reasons, but this does not mean that roads were not used, created or repaired. The reasons were probably various and different from region to region. For example, with Christianity, the road network acquired new life, organization and meaning creating a “spiritual topography”. Also, a shifting in trade routes and flow information changed.⁹⁶⁷

In dry regions the presence of water was a pre-requisite to any form of mobility. Therefore, in the Palmyrena region, all roads were organized based on available water resources. Regular water points were guaranteed along all tracks. Roadways could also have been equipped with complementary infrastructures that facilitated the travellers. There were stopping points where those on official government business (*cursus publicus*) could obtain food, fodder and lodging (*mansiones*) and, if necessary, fresh horses and carriages (*mutationes*).⁹⁶⁸ These facilities were not

⁹⁶⁴ *IGLS XVII*; Yon 2002 and 2004.

⁹⁶⁵ Laurence 2004, 48; Magnani 2014 (forthcoming).

⁹⁶⁶ Laurence 2004.

⁹⁶⁷ Mass, Ruths 2012, 256; Seland 2012b; Seland 2013.

⁹⁶⁸ The *cursus publicus* was settled and organized by Augustus (Suet. *Aug.* 49.5).

restricted to main trunk roads but extended outward along secondary ones as well. They were maintained at the expenses of the local communities. Officials with imperial permits were housed for free, but private individuals had to pay for services.⁹⁶⁹ Road could also be equipped with watching tower to patrol and secure the traffic, as it seems to be the case along the *Strata Diocletiana* and perhaps along the *Palmyra-Epiphaneia*.

In Roman imperial times the ancient Palmyra was the heart of a complex road network system with important strategic, military and commercial functions that, through the inner Syrian steppe, linked the Mediterranean and the Persian Gulf. The history and development of this road network, in the region, corresponded to a progress in the establishment and evolution of the provincial system. The Southwest Palmyrena was part of this “macro” system that changed over time. This chapter aims to consider and analyse the route network within the Southwest Palmyra in order to establish patterns of connectivity between sites in the area and toward the outer areas. As it has been pointed out above, not all the routes actually covered during Roman times, by men and objects, can be recorded because no evidences are available to trace all their paths. I intend therefore to consider here only those which are attested either epigraphically (i.e. from milestones) or literary (i.e. itineraries or maps). Of course the road system would have been much more complex because a lot of “pistes des contournement or voies de rocade” provided alternative or complementary itineraries to the “main” ones.⁹⁷⁰ As borne out by the analysis of the communication network of which the Southwest Palmyrena was part, there was a coexistence of more routes that offered different options, both in term of time, security and cost, that changed in importance and use over time.

5.2. Palmyra-Epiphaneia-Apamea-Antiochia

This paragraph is based on the discoveries achieved, between 2008 and 2010, by the joint Syrian-Italian geoarchaeological survey project in the Western Palmyra desert region. During the archaeological survey in the area, just west of Palmyra’s oasis, the mission discovered 16 Roman milestones, some of them still bearing readable inscriptions, mostly unpublished.⁹⁷¹ A preliminary epigraphical and historical research on these milestones, to which I have collaborated and I refer here for further and more specific data, has been conducted by Dr. Stefano Magnani and Dr.

⁹⁶⁹ Adams, Laurence 2001, 97; Butcher 2003, 130;

⁹⁷⁰ The terms are used respectively by Hammad 2010, 142 and Poidebard 1934.

⁹⁷¹ The Syro-Italian mission has actually recovered 11 of them. The other 5, still along the same road, were identified by the Norwegian mission (Palmyrena Project) that has collaborated for the publication with photos and information. The milestones have been numbered from 1 to 16 but there are also given the number systems adopted by the Udine and Milan équipe (nr. 95-106) and by Bergen (MS 01-13), see Table 1.

Leonardo Gregoratti (University of Udine) and its results are now sous press for the journal «Syria».⁹⁷²

Starting around 12 km west of Palmyra, the milestones are more or less regularly distributed (1,600 m)⁹⁷³ from the VIII to the XXIII or XXIV mile, with two gaps at the presumed X and XII miles (Fig. 5.1-2).

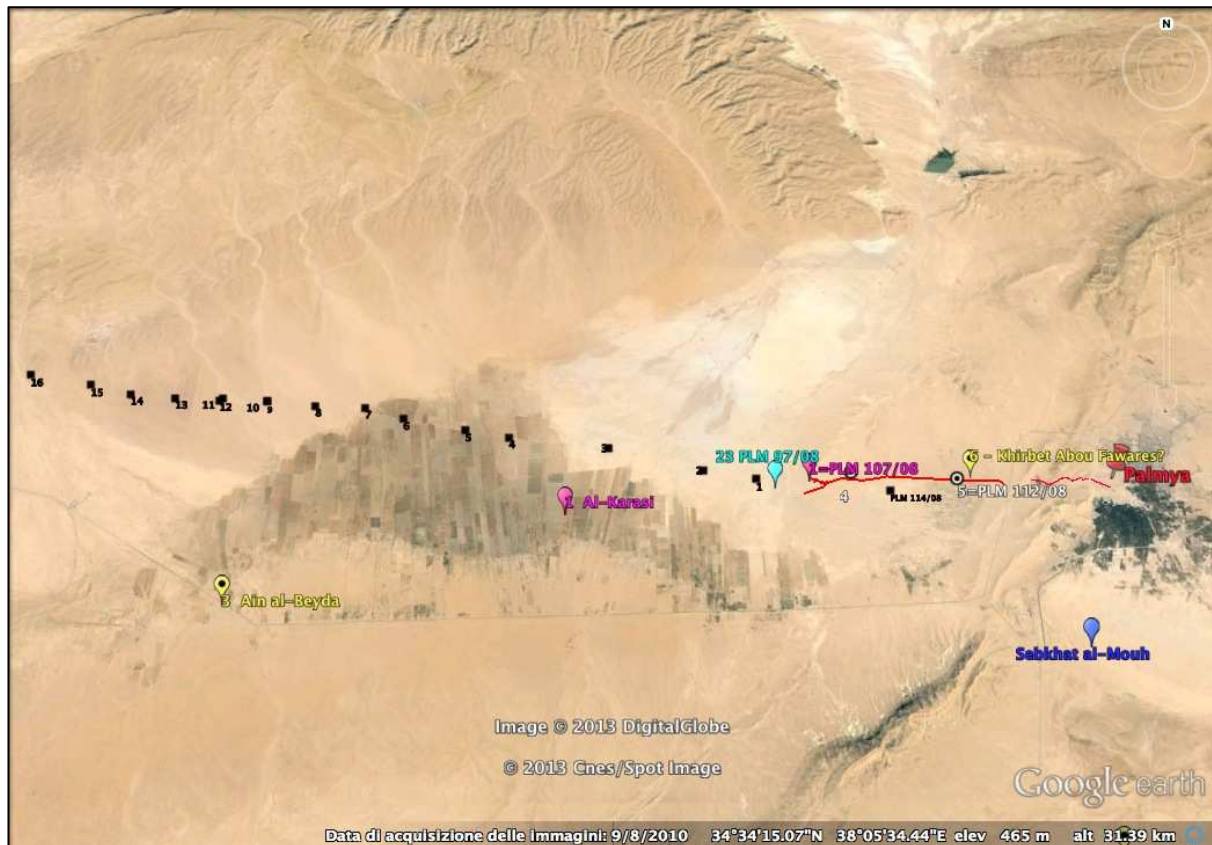


Fig. 5.1. Location of milestones (1-16) and related structures.
(Image produced from Google Earth)

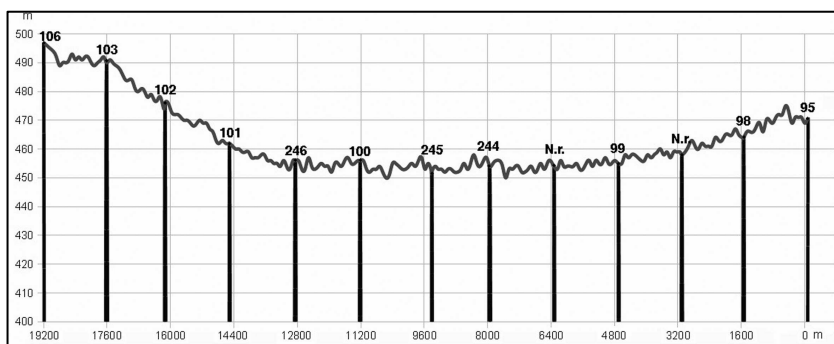


Fig. 5.2. Distances between milestones recovered by the Italian mission (n. 1/95-11/106).
(Image courtesy of Prof. M. Cremaschi and A. Perego)

⁹⁷² Magnani *et alii* (forthcoming).

⁹⁷³ Which is roughly 10% more than a theoretical Roman mile (1,479 m).

Apart for the first milestone, which lays on the surface of the pediment's base of Ruwesal-Abou al-Fawar, n. 2-7 are located in the alluvial fan of Wadi al-Abyad, while n. 8-16 are already outside the western limits of the Ad-Daw plain. The milestones, made of local limestone, have been found *in situ* or slightly displaced. Some of them were still standing but partially covered by the deposits of the great Ad-Daw alluvium, while others were fallen, buried or lying on the surface (Fig. 5.3).

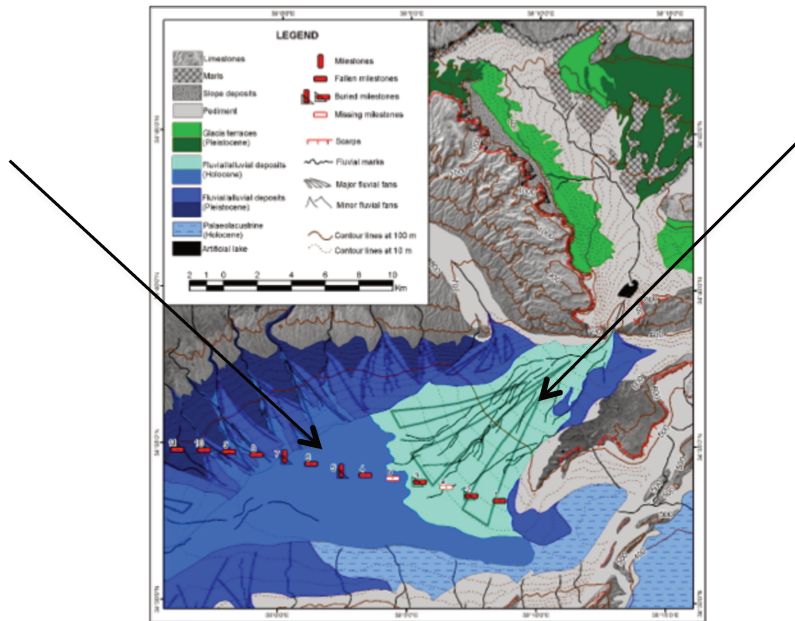


Fig. 5.3. Geomorphological location of the milestones recovered by the Italian mission (n. 1-11).
(Image courtesy of Prof. M. Cremaschi and A. Perego)

It is possible to identify different shapes for the milestones' columns: a) with high basement; b) without basement or apparently cut; c) with one side against a wall or structure that cannot be better identified.⁹⁷⁴

They are all inscribed with Latin inscriptions, even if some letters show a more Greek stylistic version, and at least in one case (n. 6) they were painted in red colour.

Despite some doubts and perplexities regarding the whole series of milestones, concerning in particular the correct indication of the miles or stylistic and grammatical mistakes, the texts are readable from photographic images,⁹⁷⁵ integrated with the findings of Sterrett, Musil and Kalinka,⁹⁷⁶ at the end of nineteenth century, and of Schlumberger in the last century,⁹⁷⁷ which

⁹⁷⁴ The photographic documentation is available from the Palmyrena Project website <http://www.hist.uib.no/antikk/dias/Syria/PalmyraW/Milestones/index.htm>.

⁹⁷⁵ Dr. Magnani and Gregoratti could not carried out an autoptique analysis but had to use only photos provided by the Italian mission comparing it with those of the Norwegian website.

⁹⁷⁶ Sterret 1888; Musil 1928, 135; Kalinka 1900. On these texts is based the milestones' edition of *CIL* and the study of Thomsen (1917, 25-27).

⁹⁷⁷ Schlumberger 1939c.

allows the, almost, completely reconstruction of the milestones' sequence relative to a section of this route.

Nr.	Equivalence ⁹⁷⁸	Coordinates (Degrees/Decimal)	Mile (From Palmyra)	Mile on stone	Series	Bibliography
1	nr. 95	34°33'14" N 38°08'34" E= 34.55389N 38.14278E	8	VIII	- Caracalla (A.D. 212/213); - Diocletian and Maximian (A.D. 287 or 289-290 or 296-299).	Unpublished: Magnani <i>et alii</i> (forthcoming).
2	nr. 98	34°33'23" N 38°07'28" E= 34.55667N 38.12444E	9	anepigraph		
	none		10	none		
3	nr. 99/MS 01	34°33'49" N 38°05'29" E= 34.56361N 38.09139E	11	missed	- Caracalla (A.D. 212/213)	Kalinka 1900, 24, nr. 9 = <i>CIL</i> , III, 14177, 5 = Thomsen 1917 nr. 46; Magnani <i>et alii</i> (forthcoming).
	none		12	none		
4	nr. 244/MS 02	34°34'01" N 38°03'22" E= 34.56694N 38.05611E	13	illegible		
5	nr. 245/MS 03	34°34'10" N 38°02'26" E= 34.56944N 38.04056E	14	XIII	- Caracalla (A.D. 212/213)	Unpublished: Magnani <i>et alii</i> (forthcoming) but compare it with Sitlington Sterrett 1888, 446, nr. 648 = <i>CIL</i> , III, 6722 = Thomsen 1917 nr. 44.
6	nr. 100/MS 04	34°34'22" N 38°01'16" E= 34.57278N 38.02111E	15	missed	- Septimius Severus and Caracalla (<i>Venidius</i> <i>Rufus</i> – A.D. 198)	Sitlington Sterrett 1888, 447, nr. 649 = <i>CIL</i> , III, 6723 = Thomsen 1917 nr. 42; Magnani <i>et alii</i> (forthcoming).
7	nr. 246/MS 05	34°34'36" N 38°00'14" E= 34.57667N 38.00389E	16	XVI	- Caracalla (A.D. 212/213)	Sitlington Sterrett 1888, 447, nr. 650 = <i>CIL</i> , III, 6724 = Thomsen 1917 nr. 43; Magnani <i>et alii</i>

⁹⁷⁸ nr. = Number system of Italian Geoarchaeological mission; MS = Palmyrena Project.

						(forthcoming).
8	nr. 101/MS 06	34°34'38" N 37°59'09" E= 34.57722N 37.98583E	17	XVIII	- Septimius Severus and Caracalla (<i>Venidius Rufus</i> – A.D. 198)	Sitlington Sterrett 1888, 447, nr. 651 = <i>CIL</i> , III, 6725 = <i>AE</i> 1888, 92 = Thomsen 1917 nr. 41; Magnani <i>et alii</i> (forthcoming).
9	MS 07(1)	34°34'44" N 37°58'06" E= 34.57889N 37.96833E	18	XVII	- Septimius Severus and Caracalla (<i>Venidius Rufus</i> – A.D. 198); - Diocletian and Maximian (A.D. 287 or 289-290 or 296-299)	Unpublished: Magnani <i>et alii</i> (forthcoming).
10	nr. 102/MS 07(2)	34°34'44" N 37°58'06" E= 34.57889N 37.96833E	18	missed	- Caracalla (A.D. 212/213)	Unpublished: Magnani <i>et alii</i> (forthcoming).
11	nr. 103/MS 09	34°34'47" N 37°57'08" E= 34.57972N 37.95222E	19	XX	- Caracalla (A.D. 212/213)	Unpublished: Magnani <i>et alii</i> (forthcoming).
12	MS 08	34°34'44" N 37°57'00" E= 34.57900N 37.95110E	19	missed	???? Septimius Severus and Caracalla (<i>Venidius Rufus</i> – A.D. 198);	Unpublished: Magnani <i>et alii</i> (forthcoming).
13	nr. 106/MS 10	34°34'47" N 37°56'06" E= 34.57972N 37.93500E	20	missed	- Caracalla (A.D. 212/213)	Unpublished: Magnani <i>et alii</i> (forthcoming).
14	MS 11	34°34'52" N 37°55'07" E= 34.58100N 37.91870E	21	[X]XII	- Caracalla (A.D. 212/213)	Unpublished: Magnani <i>et alii</i> (forthcoming).
15	MS 12	34°35'00" N 37°54'13" E= 34.58420N 37.90350E	22	XXIII	- Caracalla (A.D. 212/213)	Schlumberger 1939c, 547-548, nr. 1; Magnani <i>et alii</i> (forthcoming).
16	MS 13	34°35'15" N 37°52'51" E= 34.58750N 37.88080E	23 or 24	anepigraph		Unpublished: Magnani <i>et alii</i> (forthcoming).

Table 1. Milestones

As shown from an analysis of the inscriptions, the first stage of the road could be dated to A.D. 198 and attributed to *Venidius Rufus*, legate of Syria, on behalf of Septimius Severus and his son Caracalla. The project was likely related to the general program of reorganization of the eastern provinces, that, before the accession to the throne of Septimius Severus, suffered from the battles between the latter and Pescennius Niger and from the war against the Parthians. In this context, the road's activity was connected to the division of the previous Syria province in two minor entities, *Syria Phoenice* (with major centre in Tyr) and *Coele Syria* (with major centre, temporarily in Laodicea and from A.D. 200 in Antiochia, punished for having taken the part of Pescennius Niger). In any case, this intervention was part of a symbolic process of continuity of the Empire with the Antonine age of prosperity and especially with the great conqueror and *Optimus princeps*, Trajan.⁹⁷⁹

The road which, by the way of *Epiphaneia*, connected the main centres of the province of *Syria Coele*, Antioch and Apamea with Palmyra,⁹⁸⁰ the territories of the steppe and the Middle Euphrates and the emporia of the Persian Gulf, was of considerable importance for the military control of the eastern regions, for the organization and administration of the new province and for the commercial network. In this context, the restoration carried out by Caracalla and attested by the second series of milestones, only fifteen years later, suggests the important role played by the route, increasing its ideological value, but, at the same time, it could have correspond to a real exigence. The road's functionality could have been shortly compromised because the beginning, at that time, of the burying process of some road portions and the deterioration of its infrastructures determined by exceptional phenomena of overflow of *wadis* that the road crossed or flanked.⁹⁸¹

A further intervention was completed by Diocletian and Maximian at the end of the 3rd century, as part of a general reorganization, of the eastern provinces, on the occasion of the campaigns against the Saracens or against the Persians and the following agreements between Diocletian and the Sassanid sovereign Narses (A.D. 298).⁹⁸² At this time, the route seems to constitute one of the transverse axes (internally directed) of the system known as *Strata Diocletiana*. I will go back to this on paragraph 5.4.3.

The road's path itself is very well preserved between the first milestone and Palmyra. Indeed, at site PLM 114/08 (Fig. 5.1) a paved stretch of the Roman road with an E-SE/W-NW orientation,

⁹⁷⁹ Magnani *et alii* (forthcoming); Magnani 2014 (forthcoming).

⁹⁸⁰ Three possible routes connected Apamea with Antiochia (Castellana 2001).

⁹⁸¹ *Idem*.

⁹⁸² For the discussion over the existence of a Diocletian's campaign against Saracens see below.

perfectly lined with the series of following milestones, has been recovered. It is preserved for a length of about 10 m and is about 3 m wide and paved with calcareous flagstones (Fig. 5.4).⁹⁸³



Fig. 5.4. Paved stretch of the road near Abou Fawares.
(Image courtesy of Prof. D. Morandi Bonacossi and M. Cremaschi)

The Italian geoarchaeological survey has also led to the discovery of other structures most likely related to the road. Some kilometres westwards from the paved stretch of the road and half way toward the first milestone, a Roman site (10 = PLM 97/08-Fig. 5.5.a-c)⁹⁸⁴ has been recorded which is largely covered by sand and still in a very good state of preservation. It is an architectural complex built with mud-bricks, with walls standing up to a height of at least 2 m, arched doorways, plastered walls and vaults. Around the main building of rectangular plan there is a series of structures arranged in a U-like plan. The pottery from this complex dates to the 2nd-3rd century A.D.



Fig. 5.5. a-c. Site nr. 10.
(Images courtesy of Prof. D. Morandi Bonacossi and M. Cremaschi)

⁹⁸³ Al-Maqdissi, Cremaschi, Morandi Bonacossi 2010.

⁹⁸⁴ Coordinates: 34°33'6.90"N 38° 8'56.56"E = 34.551917N 38.149044E. This in addition to other archaeological elements clearly recognizable next to some milestones (nr. 2, 10 and 11).

The complex is visible also from Google Earth (Fig. 5.6) but not in CORONA images. Its closeness to the Roman road, with milestones, indicates that the architectural complex may have been a *mansio* or a *mutatio*, i.e. a stop-station along this main itinerary. In fact, a comparison with Poidebard's aerial photo of Umm es Salabih (Fig. 5.7), a way station 115 km southeast of Palmyra along the way to Hit, supports this idea.⁹⁸⁵



Fig. 5.6. Site nr. 10 = PLM 97/08
(Image produced from Google Earth)



Fig. 5.7. Umm es Salabih's aerial photo
(Poidebard 1934, Pl. CIII.2)⁹⁸⁶

⁹⁸⁵ Poidebard 1934, 109-110. An inscription found there from A.D. 225 records the name of a *strategos* of Ana and Gamla, and implies that the detachment did make use of the station on their way to or from the Euphrates (Cantineau 1933, 179-180; Young 2001, 159).

⁹⁸⁶ See also for Pl. CIV.2 for a site's plan.

Moreover, it should not be forgotten that, as analysed above,⁹⁸⁷ 1.5 km west of the first milestone toward Palmyra, north of the paved stretch of the road, a *qanat*/aqueduct and many archaeological structures (nr. 1, 4, 5, Fig. 5.1) have been recovered. Some of them, as site nr. 4 and 5, may have had military functions, as controlling both the *qanat*/aqueduct and the road. In any case, this entire west area was intensively exploited, controlled and connected with Palmyra.

The data acquired by the Italian mission, if combined with those of the Norwegian one and of Schlumberger and Bounni during the last century, leads to suggest further assumptions.⁹⁸⁸ The road – archaeologically investigated by the Italian survey only for the section leading west from Palmyra- once it reached the Wadi Djahr, it turned north to follow it. Schlumberger, starting from the neighbourhood of the Wadi Djahr, was able to identify 5 milestones, the first of them corresponds exactly with nr. 15, at XXIII mile from Palmyra. The second milestone was about 600 m from this and had the same number of miles (from Palmyra) but it was erected on behalf of Trajan, between the 10th December 108 and the 9th December 109 A.D.. With a low base it appears similar to nr. 16. One mile west, Schlumberger discovered another milestone of the same type, without inscriptions except for the numeral XXIII. It corresponds evidently to nr. 16, that should lie about 2,200 m west from nr. 15. The others two milestones belong to the series of Caracalla, at least the first one, with the indication of XXVI miles from Palmyra.⁹⁸⁹ In 1958 Bounni discovered near al-Tourfa, 22 km from Palmyra, a milestone belonging to the series of Trajan and bearing the numeral XIII.⁹⁹⁰ Since al-Tourfa is located south of the investigated route, it must be considered that in Trajan time the route coming from the Wadi Djahr turned east toward Palmyra somewhere south of the Severan route, probably only at the confluence with the route from *Emesa*. It cannot be excluded that the southern course of the route was dictated by the need of avoiding the area subject to the *wadis*' floods . Therefore, there is the possibility that the northern stretch of the route was for the first time managed or monumentalized, when not constructed, in A.D. 198.⁹⁹¹ Once it reached the Wadi Djahr, the route have probably followed the *wadi* by the way of the Djebel Chéfé and the Sorrate ech Chéfé until Khirbet al-Bilaas, Aguerbate, Apamea and the Oronte valley (Fig. 5.8).⁹⁹²

⁹⁸⁷ Chap. 4.2.3.

⁹⁸⁸ For the Palmyrena Project see Meyer 2014 (forthcoming); Schlumberger 1939c, 1951; Bounni 1960.

⁹⁸⁹ Schlumberger 1939c.

⁹⁹⁰ Bounni 1960.

⁹⁹¹ Magnani *et alii* (forthcoming); Magnani 2014 (forthcoming).

⁹⁹² Schlumberger 1939b, 1939c.

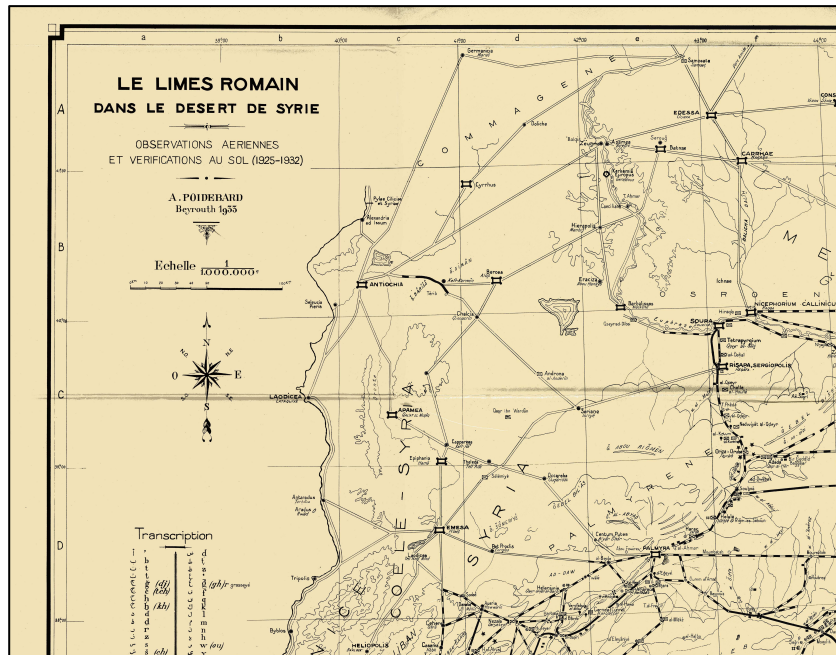


Fig. 5.8. Palmyra-Epiphaneia-Apamea-Antiochia.
(Poidebard 1934, Map)

The fact that the route, along which the milestones were placed, connected Palmyra with *Epiphaneia*/Hama on the upper Orontes river, it can be understood according to the evidence collected by Sterret, who investigated the itinerary during the Wolfe expedition.⁹⁹³

This is also the route indicated in the *Tabula Peutingeriana*, with the intermediate stops and distances: Palmyra -*Centum Putea* -(XXVII) *Occaraba* -(XXVIII) *Theleda* -(XXVIII) -*Apamea*.⁹⁹⁴

Leaving aside the problem of the identifications of some of these localities, as *Centum Putea* and *Occaraba* (*Theleda* is probably to identify with Tell Ada), it should be noted that along this route was found the well-known boundary stone at Khirbet al-Bilaas, dating from the age of Antoninus Pius (A.D. 153).⁹⁹⁵ It certifies an early intervention by *Creticus Silanus*, governor of the Syrian province between A.D. 12 and 17, underlining the importance of the route that connected *Antiochia* with Palmyra, already at that time.⁹⁹⁶

To conclude, the discoveries made by the Italian geoarchaeological mission, have provided new and invaluable data to re-assess the historical development of part of Palmyra's road system. But, at the same time, they have highlighted the importance of the route within the eastern communication network providing a new element for the discussion about the links of the caravan city with the Mediterranean coast. I will discuss the issue in the following paragraph.

⁹⁹³ Sitlington Sterrett 1888, 446-448.

⁹⁹⁴ *TP* Frag. X. Cfr. Also Schlumberger 1939b.

⁹⁹⁵ *AE* 1939, 179 = Schlumberger 1939b, 58. See also chapter 1.

⁹⁹⁶ Magnani *et alii* (forthcoming); Magnani 2014 (forthcoming).

5.3. Palmyra-Emesa

The distance between the two cities is around 150 km, so it is the shortest and most direct one toward the Mediterranean.⁹⁹⁷ *Emesa* was also connected to Antioch by water by the Oronte river. Three water points have been used until modern time by caravans and/or travellers on this road: 'Aifir, Fourqlous, i.e. ancient *Bet Proclis*,⁹⁹⁸ and Ain al-Beyda (Fig. 5.9).⁹⁹⁹ At Ain al-Beyda, there was the junction between the road to *Emesa* and that to Damascus via al-Qaryatayn, before passing the religious site of al-Karasi.¹⁰⁰⁰ The road is not attested in any itinerary but only through milestones. Moritz is the only one to mention traces of pavement between Ain al-Beyda and Tyas.¹⁰⁰¹

Thomsen carried out a survey of the recovered milestones, according to him dating from Septimius Severus to Constantine.¹⁰⁰² Bauzou already pointed out that the milestone dating to Constantine's time (A.D. 330 = nr. 45 a-b) was not *in situ* and belonged to the milestones' series of the *Strata Diocletiana*.¹⁰⁰³ The discoveries made by the Italian mission have proved that Thomsen was wrong also concerning the other milestones (nr. 41, 42, 43, 44, 46 = Nr. 8, 6, 7, 5, 3 Table 1)¹⁰⁰⁴ that actually did not belong to the road toward *Emesa* but to that toward *Epiphaneia*. Nr. 48 is very damaged and the reading unclear.¹⁰⁰⁵ Nr. 39 and 47 are the only one not belonging to the road for *Epiphaneia* but actually for *Emesa*. Nr. 39 corresponds to *CIL*, III, 6049 = 6727 and to Les Bas, Waddington 1870, 2629.¹⁰⁰⁶ It presents two inscriptions: one, in Greek, dated to A.D. 271 and one, in Latin, to Diocletian.¹⁰⁰⁷ Nr. 47 corresponds to Les Bas, Waddington 1870, nr. 2628.¹⁰⁰⁸ Under the Greek text, a Palmyrene inscription appeared at that time, showing the indication of the XIV mile, while, above the Greek text, there are some Latin characters (*Domino nostro*) followed by numeral XIII. The Greek text is the famous inscription of Zenobia and

⁹⁹⁷ To Epiphania 45 km, to Apamea 95 km.

⁹⁹⁸ For the modern name see Hartmann 1899, 141-143. *Bet Proclis* is mentioned in a late source, i.e. *ND Or.* 32,12 as seat of *Equites Saraceni indigenae*. Nearby, a Roman or Byzantine *qanat* was found at Qnaye (Genequand 2002, 29-30).

⁹⁹⁹ Waddington 1861 (Chabot 1939, 361); Moritz 1889, 9-11 (also Duèlib as water point); Dussaud 1927, 261; Schlumberger 1939c, 552-553; Gatièr 1996, 431.

¹⁰⁰⁰ See following paragraph.

¹⁰⁰¹ Moritz 1889, 9.

¹⁰⁰² Thomsen 1917, 25-27, route X, nr. 39-48.

¹⁰⁰³ Kalinka 1900, 23-24 nr. 8 = *CIL*, III, 14 177 (4) = *AE* 1993, 1606. Bauzou 1989a, 416-418 nr. 113-114 and 1993, 45.

¹⁰⁰⁴ For Nr. 40: «Zwei am Boden liegende Steine, deren Inschrift und genauer Standpunkt nicht angegeben ist». They are likely to have belonged to the same road.

¹⁰⁰⁵ *CIL*, III, 14 177 (6).

¹⁰⁰⁶ Not found by Schlumberger as well as nr. 2630 (1939c, 552 n.2).

¹⁰⁰⁷ ...G / ...Y[?]/ CIETIANO .../ COL (onia) PALM(yra)/ ... ρε ... του...τιτοβ Αντιοχου...

¹⁰⁰⁸ Even if distances are confusing: «Ungefähr 25 Minuten weiter östlich von nr. 46 = Les Bas, Waddington 1870, 2628 («wo der Stein aber 3 ½ Stunden westlich von Palmyra angesetzt wird, während die obige Angabe nach Musil Berechnung gegeben ist»).

Vaballathus (A.D. 268-270), while the Latin one attests a refurbishment by Diocletian.¹⁰⁰⁹ West of these milestones, another one has been found at Tyas, half way between Ain al-Beyda and Fourqlous/*Bet Proclis*,¹⁰¹⁰ attesting the intervention of Diocletian.¹⁰¹¹ Since the emperor is mentioned as the only *Augustus*, the text can be dated between November A.D. 284 and April 286.¹⁰¹²

It is worth mentioning that, half way between Tyas and Ain al-Beida, remains of an ancient military (?) structure are visible from satellite images (Fig. 5.9-10). The location fits perfectly with the site called Khan al-Trab/al-Leben mentioned by Musil.¹⁰¹³

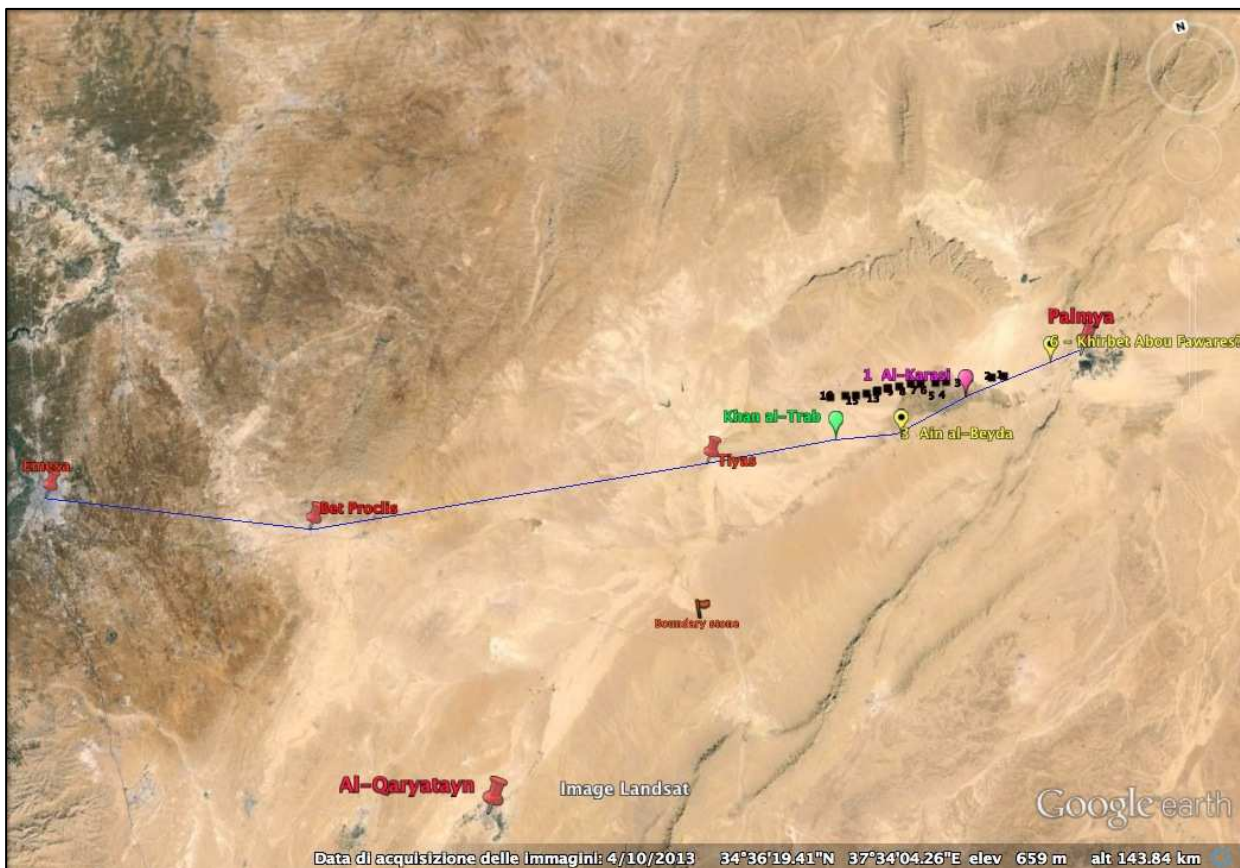


Fig. 5.9. Route Palmyra - *Emesa*.
(Image produced from Google Earth)

¹⁰⁰⁹ *CIS* II, 3971 = *PAT* 317 = *OGIS* 649. See also chap. 3 (al-Karasi).

¹⁰¹⁰ Tyas is located c. 103 km from Emesa and 62 km from Palmyra.

¹⁰¹¹ The milestones recovered are, in fact, two but only one bears an inscription. Is it perhaps that noted in Kiepert's map (Von Oppenheim 1899-1900) and by Thomsen 1917 as nr. 38?

¹⁰¹² *D(omino) N(ostro)/ Imp(eratori) Caes(ari) G(aio) Val(erio)/ Diocletiano p(io) (?) [(elicio)] (?)/ Invicto Aug(usto) Col(onia)/ Palm(yra). Mil(ia passuum) XXXVIII* = Poidebard 1934, 200 n.l. The stone is 2 m high and 1.33 m large.

¹⁰¹³ Musil 1928, 43, 132, 134, 257, (D7). It may correspond to what is noted as Roman tower in Kiepert's map (Von Oppenheim 1899-1900).

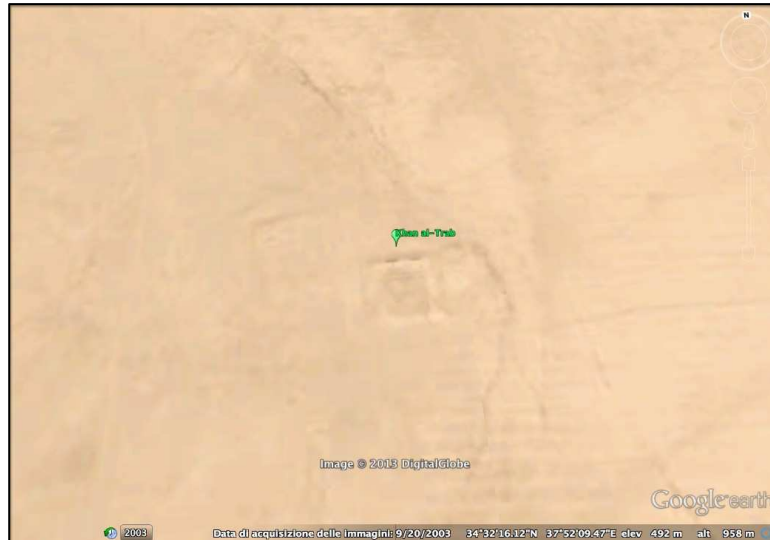


Fig. 5.10. Khan al-Trab.
(Image produced from Google Earth)

As already introduced above, the discoveries made by the Italian mission have provided new elements for the discussion about the links of the caravan city with the Mediterranean coast. The common idea was that proposed by Seyrig in a famous article published in 1959 in the review «Syria», who assumed that the rise and decline of *Emesa* followed that of Palmyra and suggested that it was its role as an *entrepôt* for Palmyra which gave it its prosperity.¹⁰¹⁴ In addition to the strategic position of the first, the proximity of the two cities and the attestation of milestones along the road, the hypothesis of Seyrig was based on the fact that, before Roman time, *Emesa* was only a «bourgade rustique» and after the 3rd century A.D. it seems «qui a cessé d'être une ville».¹⁰¹⁵ This hypothesis was taken up by Gatier in 1996 who demonstrated, unquestionably, that *Emesa* was still an important city in Late Antiquity.¹⁰¹⁶ The importance and prosperity of *Emesa* was not linked to its *entrepôt* role, but to the city's agricultural resources, for which it relied on a dam capable of delivering 1,800 l of water, per second, to its 1,000 hectares of gardens.¹⁰¹⁷ The date of the construction of the dam has been debated, with suggestions ranging from Bronze Age to Roman time but recently Kamash suggested a Diocletianic one based on Talmudic references and the style of construction.¹⁰¹⁸ The creation of a water reservoir from the dam led to the possibility of providing water for both *Emesa*'s urban and rural needs, and highlights the extent to which, like

¹⁰¹⁴ Seyrig 1959. Already Rostovzeff introduced *Emesa* within his list of caravan cities (Rostovzeff 1932).

¹⁰¹⁵ The assumption was based on the Libanius's assertion (4th century A.D.- *Orat.* XXVIII, 42).

¹⁰¹⁶ Gatier 1996. Already Will 1992, 83 suggested that the basis for Seyrig's assumptions was weak. See also Sommer 2005a, 203.

¹⁰¹⁷ Seyrig 1959, 189; Gatier 1996, 432.

¹⁰¹⁸ See Kamash 2009, 69-70 for a summary of the debate and the new interpretation. Cfr. Also Schnitter 1994, 76. Gatier (1996, 434) opted for the 14th century A.D. while Seyrig (1959, 189) connected it to the imperial time.

Palmyra, the hinterland and city were interdependent.¹⁰¹⁹ In any case, it seems that archaeological data available for the first two centuries A.D. are actually very scarce which means that it is extremely difficult to make any hypothesis about Emesa's effective wealth. In other words, without denying that connections existed between the two cities and that the Emesene elites could have profited from Palmyra's commercial attitudes, nothing seems, to date, to suggest that *Emesa* was the main western terminal for the eastern goods coming through Palmyra.¹⁰²⁰ Therefore, scholars have recently proposed new possible scenarios. Gregoratti suggested that the passage of goods between Palmyra and the Mediterranean could be done through the Decapolis, connected to inner Syria by the road that led from Damascus through the steppe, and reached the southern periphery of Palmyra.¹⁰²¹ However, Seland, considering this road very marginal for the Palmyrene commercial network and, unlikely that it was used for transporting goods in direction of the Mediterranean, proposed that the merchandises from Palmyra reached Antioch following the route by way of Chalkis (near modern Aleppo).¹⁰²²

The route studied by the Italian mission could provide a different possible scenario, evidencing the possibility of closer contacts between Palmyra, the cities of the middle valley of the Orontes and those of northern Syria. Meanwhile, the new data at our disposal seem to exclude the hypothesis advanced by Seyrig, reducing the importance he attributed to the direct route between Palmyra and *Emesa*. Aside the inscription of Alexandros which is the only document correlating the two cities at the beginning of the 1st century A.D.,¹⁰²³ the documentation regarding this route, certainly very ancient, dates back, mostly, to the end of the 3rd century A.D when Palmyra was already losing its economic function.¹⁰²⁴ Since the last years of the reign of Augustus or the beginning of that of Tiberius, until the Severan age, and probably even later, the route from Palmyra to Antioch, by the way of *Apamea* was instead probably the most important for linking Palmyra and the Mediterranean ports. The indirect evidence that supports this assumption is that goods were taxed in Antioch as attested by a Palmyrene inscription dated to A.D. 161, in which the traders from Spasinou-Charax, on the Persian Gulf, celebrate the dedication of a column and a statue in honour

¹⁰¹⁹ Kamash 2009, 57.

¹⁰²⁰ Magnani 2014 (forthcoming). Magnani *et alii* (forthcoming).

¹⁰²¹ Gregoratti 2011. The route is that depicted in the *TP* Segm. X (see following paragraph).

¹⁰²² Seland 2011, 404.

¹⁰²³ This fragmentary Aramaic inscription from Palmyra records the diplomatic efforts conducted both at the Emesene court and in the far-off Characene kingdom by a certain *Alexandros* on behalf of Germanicus, Tiberius' delegate for the East in the years A.D. 18-19 (Cantineau 1931, 139-141; Seyrig 1932, 266-268; Teixidor 1984, 11; Gawlikowski 1996, 140; Frézou 1996, 149; Zayadine 1996, 168). I refer to Gregoratti 2011 and 2013 for a discussion of the mutable political situation within the event may have occurred.

¹⁰²⁴ Gregoratti himself who collaborated on the study of the milestones recovered by the Italian mission, has reconsidered this as the most likely option (Gregoratti 2013); Magnani 2014 (forthcoming); Magnani *et alii* (forthcoming).

of a certain *Marcus Aemilius Marcianus Asclepiades*, member of the Antiochian *boulè* and in charge of the tax collection of a $\frac{1}{4}$ of the value of all goods crossing the imperial frontier (i.e. *tetartè*).¹⁰²⁵ After that, duties were levied and goods reached the Mediterranean and the western empire through the Seleucia's harbour.¹⁰²⁶

This, however, does not mean that the other routes were not in use at the same time and with the same functions, both on a local (as the alternative northern *Emesa-Palmyra* road)¹⁰²⁷ and in a large (Palmyra-Damascus-Decapolis/Palmyra-Antioch via Chalkis) scale, i.e. those for transport of eastern goods from the Persian Gulf to the Mediterranean trough or by the way of Palmyra.¹⁰²⁸

5.4. Palmyra-Damascus

5.4.1. Introduction

According to Poidebard three routes, naturally, connected Palmyra and Damascus in Roman time (Fig. 5.11).¹⁰²⁹

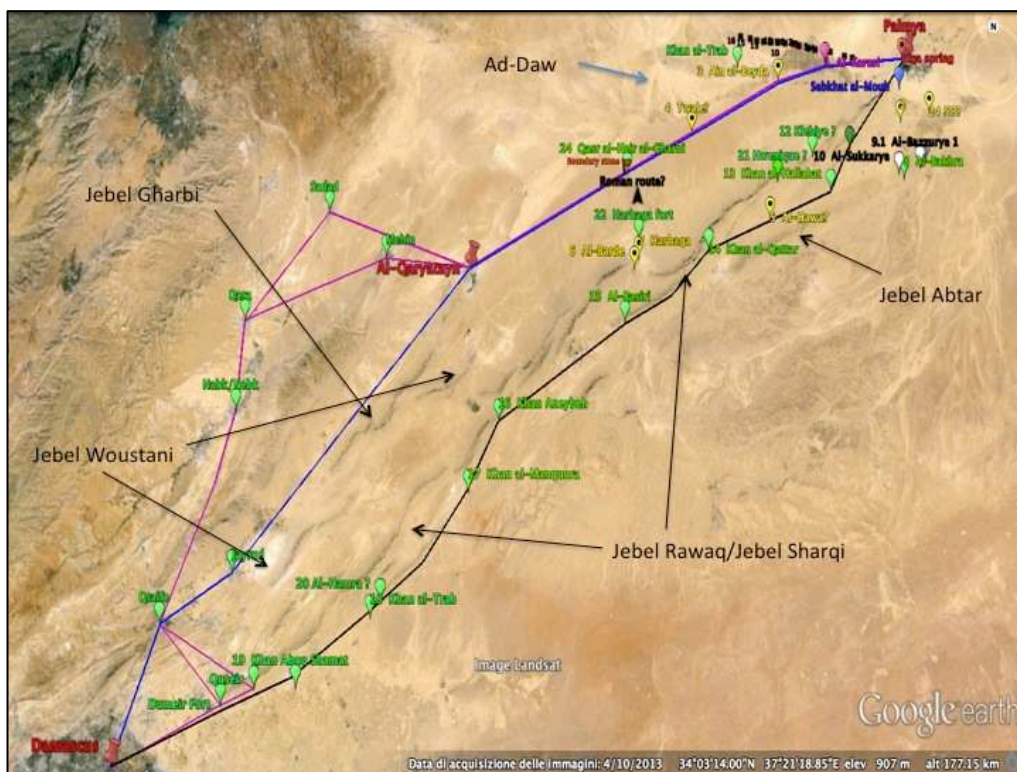


Fig. 5.11. Routes from Palmyra to Damascus (and *viceversa*) according to Poidebard. (Image produced from Google Earth)¹⁰³⁰

¹⁰²⁵ *AE* 1947, 179 = *Inv. Palm.*, X, 29.

¹⁰²⁶ Seland 2008b; Young 2001, 149.

¹⁰²⁷ Dussaud 1927a, 261; Hammad 2010, 133.

¹⁰²⁸ Magnani 2014 (forthcoming).

¹⁰²⁹ Poidebard 1934, 34-42 and general map.

All of them go through the valleys of the massif that branches out from the Anti-Lebanon and runs from Damascus in a northeast direction, dividing in three ranges: the Jebel Gharbi, the Jebel Woustani and the Jebel Rawaq (all together known as Palmyra/Qalamoun ranges). The first two end on the edge of the al-Qaryatayn's plain delimiting the Ad-Daw clayey depression that extends eastward up to Palmyra. Only the Jebel Rawaq, also known as Jebel Sharqi, continues until Palmyra, bordering to southern limits of the Ad Daw and separating the Homs desert from the al-Hamad, i.e. the arid steppe plain stretching southward from Palmyra towards Jordan.

The nature of the region, its relief and available water supply, exerted a great influence on its road system. Indeed the line of the Jebel Rawaq, determined the path that could be chosen, while the gaps and saddles across the range indicated where road crossing had to be built.

In fact, between Damascus and Palmyra, the natural routes across the desert region were away from the clayey Ad Daw steppe, which were boggy in winter and hot in summer. They followed instead, the high valleys, rich in sheep farming and more populated between the massif chains or the mountain slopes. Precisely they are:

a) The first route, passing between the Anti-Lebanon and the Jebel Gharbi, runs up to Nebk/Nabk and Sadad following the Damascus-Emesa road, rejoining al-Qaryatayn around the edge of the massif,¹⁰³¹

b) The second one, shortly after Damascus, follows the valleys between Jayrud and al-Qaryatayn, so between the Jebel Woustani and the Jebel Gharbi, and then goes northeast through the open flat landscape up to al-Beyda, south of the Ad-Daw depression.¹⁰³² It appears to be more a secondary route. In fact, the first stretch (from Palmyra to al-Qaryatayn) was common with that of the first route (a) and the very beginning of the road toward *Emesa*.¹⁰³³ After passing the site called al-Karasi, around 20 km west of Palmyra where the altars dedicated to the "Anonymous God" are located,¹⁰³⁴ the roads leading to Damascus diverted probably at Ain al-Beyda. Unfortunately, neither milestones have been recorded along it neither are there literary sources available. Only one inscription has been recovered at Khan al-Abyad, half way between Jayrud and al-Qaryatayn.¹⁰³⁵ This 4th century A.D. inscription, thanks the *Dux Phoenicis* for building a *castrum* that served as hostel (*mansiones*) for travellers in the steppe:¹⁰³⁶

¹⁰³⁰ Legenda: pink line = route a; blue line = route b; black line = route c.

¹⁰³¹ Poidebard 1934, 41-42.

¹⁰³² Description based on personal experience given me by Prof. Meyer. Cfr. also Poidebard 1934, 40-41.

¹⁰³³ But not, how suggested by Schlumberger (1939c, 552-553.), with that toward *Epiphaneia-Antiochia*, as demonstrated by the researches of the Italian mission. See chap. 5.2.

¹⁰³⁴ Cfr. site's sheet chap. 3.

¹⁰³⁵ The fact that this fort is homonymous with site nr. 11 let some scholars (De Ruggiero 1982, 1369) to erroneously attribute to the latter one the provenance for the inscription.

¹⁰³⁶ Isaac 1990, 176-178; Gregory 1995-1997: 1995, 94.

«On a plain totally arid and much feared by travelers because of its great expanse, because of the fate of a neighbor who died from hunger-the worst that can happen-you, *comes*, have provided a fort (*castrum*), perfectly equipped, you, Silvinus, most valiant guardian of the *limes*, of the cities, and of the emperors honored loyally all over the earth. You have prepared the earth so that it is enriched by the heavenly waters, so that it will bow under the yoke of Ceres and Bacchus. Hence, stranger, pursue your journey cheerfully and, having profited from a good deed, sing the praise of a magnanimous judge, brilliant in war and peace who, I pray, will, advanced in rank, build more such forts for the emperors, although it is a difficult task, and will rejoice in children worthy of the deeds of such a father».¹⁰³⁷

Strictly speaking, the first two roads are within the area under study only for ¼ of their length, until Qasr al-Heir al-Gharbi where the famous boundary stone (but not *in situ*) was found.¹⁰³⁸

c) The third one is called by the Bedouins “Voie de Hans” (or “Route of the Caravanserais”) because of the forts’ ruins found along it.¹⁰³⁹ The route followed the southern slope of the Jebel Rawaq. It has always been the most studied because it corresponds to the main section of the so-called *Strata Diocletiana* characterized by military forts, which apparently connected Sura on the Euphrates, through Palmyra, to al-Azraq and further to the Red Sea along the *Via Nova Traiana*. Alois Musil, at the beginning of the 20th century, connected this route with that one represented in the *Tabula Peutingeriana*. In fact, in the *TP* the road connecting Palmyra to Damascus was marked by eight posts whose number corresponds perfectly to that of the ruins he was able to identify.¹⁰⁴⁰ As already noted by Poidebard, Musil, during his explorations between 1908 and 1915, had to travel in difficult conditions and through isolated and unsafe areas, that did not allow him either to record fort’s plans and the architecture of all the castles, nor to search for all the milestones along the way.¹⁰⁴¹ However he admitted that no name had been preserved through the modern toponymi and the distances indicated on the map did not coincide with the real ones.

¹⁰³⁷ *CIL*, III, 6660=*CIL*, III, 14161=*IGLS* V, 2704=*AE* 2006, 4: [*Siccum utiq*]ue campum et viantib[us] satis invisum [ob sp]a[ti]a prolixa, ob vicini mortis eventus, [sort]i[ti]s) famem, qua non aliud grav[iu]s [ull]um, [c]astrum reddidisti, comes, ornatum sumo decori, Silvine, limitis ur[biu]m[que] fortissimae custus dominorumque fide [c]u[ltoru]m toto per orbe, et lymfis polle[r]e ca[elestibu]s ita parasti Caereris ut iugo Ba[cch]ique posset <t>eneri. Hospes, unde laetus itineris perage cursum, et boni potitu[s] actus cum laude caneto [m]agnanimi [iudi]cis [place bello]que nitentis, quem p[r]a[e]cor super[o]s alti[or]i [grad]u subnixum tal[i]a dom[i]n[is] v[el] ardua c[ond]ere [cas]tra, et natis gaude[r]e deco[r]antibus racta parentis. Translation made by Isaac 1990, 176-178. Cfr. Dodgeon, Lieu 1991, 121-122 for an alternative but similar translation.

¹⁰³⁸ *AE* 1939, 180 = Schlumberger 1939b, 63-64 = *IGLS* V, 2252 : *Fin[es] inter Hadriano[s] Palmyrenos et [He]mesenos*. Emesa, or modern Hama, lies c. 150 km west of Palmyra. Cfr. also chap. 1.1.

¹⁰³⁹ Poidebard 1934, 35-40.

¹⁰⁴⁰ Musil 1928, 239-240.

¹⁰⁴¹ Poidebard 1934, 35; Bauzou 1989a, 259-260.

Indeed, at that time, the study of the milestones found along the route, which would have proved his thesis or not, had not yet been published and Musil himself was conscious of this fact.¹⁰⁴²

The milestones found along this road indicate that it was established (or re-established) by Diocletian after A.D. 284 or during the Tetrarchy period between 293 and 305 A.D., then repaired in some sectors, more than once, until the time of Constantine (A.D. 324-326). The role of the *Strata Diocletiana* has been for a long time, and still is, an important issue among ancient historians and archaeologists of frontier studies. This because it is framed in a broader debate over different concepts of frontier and its evolution in Late Antiquity.

Disagreeing with Musil, scholars now consider the first route (a) to be the one depicted in the *Tabula Peutingeriana*. However, as will be discuss below, the exact itinerary has not been definitively established.

In any case, the third route (c) was not isolated but closely connected to the other two through “secondary” roads crossing E-W the Jebel Rawaq where possible. In fact, it has to be noted that almost all forts along the *Strata Diocletiana* guard mountain’s passes.¹⁰⁴³ As examples of these intersections have probably to be considered the road, cut in the stone, recovered by Bauzou at Khan al-Manquora,¹⁰⁴⁴ leading apparently toward al-Qaryatayn, and perhaps also that visible from Google Earth connecting al-Basiri with Qasr al-Heir al-Gharbi (Fig. 5.12 a-b).



Fig. 5.12. a-b (detail). Connection road from al-Basiri to Qasr al-Heir al-Gharbi (Image produced from Google Earth)

¹⁰⁴² Musil 1928, 240: «The exact truth will be ascertained from the milestones as soon as they are thoroughly examined.»

¹⁰⁴³ Poidebard 1934, 44-49; Bauzou 1989a, 371.

¹⁰⁴⁴ Bauzou 1989a, 309-310.

5.4.2. The road in the *Tabula Peutingeriana* (TP)¹⁰⁴⁵

With the name of *Tabula Peutingeriana*, or Peutinger Map, scholars refer to a medieval copy of an ancient Roman map now preserved at the Österreichische Nationalbibliothek as *Codex Vindobonensis* 324. This parchment band of around 7 metres long and 34 cm high is composed of eleven or possibly even more sheets or *segmenta*, on which is depicted the entire world known in ancient times.¹⁰⁴⁶

5.4.2.1. The document: history of transmission, contents and dating¹⁰⁴⁷

History of transmission

In August of 1507 the map was found by the Viennese humanist Konrad Keltes, librarian of the Austrian emperor Maximilian the 1st. The place where it was found is unknown. Scholars have speculated the monasteries of Speyer, Worms, Basel, Reichenau and Kolmar, as location.

The following year, at the time of Keltes's death, the map was taken over by his friend Konrad Peutinger (1465-1547), Chancellor of Augsburg and distinguished scholar, from who it takes its name. He understood immediately the uniqueness of this document and wanted to make it public, obtaining (in 1511) imperial permission for publication. Unfortunately he failed to complete this project when he was alive, and only several years later, in 1591, Marcus Welser (1558-1614), a descendant of Peutinger, was able to impress the *editio princeps*, which is a very valuable reproduction as, beyond some errors of transcription, it offers a better reading of the map than the actual one.¹⁰⁴⁸

As well as this edition the most famous are:

- Franz Christoph von Scheyb, *Peutingeriana Tabula Itineraria Quae in Augusta Bibliotheca Vindobonensi Nunc Servatur Adcurate Exscripta*, Vienna, 1753;
- Konrad Miller, *Itineraria Romana: Römische Reisewege an der Hand der Tabula Peutingeriana dargestellt*, Stuttgart, 1916, 1929, 1962;

¹⁰⁴⁵ This paragraph is partially based on the results already presented in December 2012 for the Palmyrena Project closing conference, held at the Danish and Norwegian Institute in Athens (1st-3rd December) and organized by the University of Bergen (Prof. C. Meyer and dr. E. H. Seland). The paper will be published in the Proceedings of the workshop in 2014 (Meyer 2014 forthcoming).

¹⁰⁴⁶ The first of them, representing Spain, Britannia, western Africa and Ireland, was probably missed already when the copy was carried out (Talbert 2010, 86-122 and 189-192).

¹⁰⁴⁷ For the best recent review on the history of the map and its publications I refer to Talbert 2010, 70-72.

¹⁰⁴⁸ The parchment presents now several cracks, tends easily to crumble and colors and words are discoloured. In particular, the green color of the sea, due to its copper content, has damaged the parchment, so that some names are completely lost or are illegible (Bosio 1983, 14-15).

– Richard Talbert, *Rome's World. The Peutinger map reconsidered*, New York, 2010, which is the one I used in its online free version: <http://www.cambridge.org/us/talbert/index.html> (consulted 27.10.2013).

Contents

Scholars consider the *TP* belonging to the *itineraria picta* category, namely drawn and coloured itineraries that represented, graphically, a territory: its physical structure, its anthropic and road situation. About these kinds of maps, *Publius Vegetius Renatus's* reference (end of 4th century A.D.) is almost the unique source of information.¹⁰⁴⁹ However it must be noted that the *itineraria picta* concerned single provinces not, as the Peutinger Map, the whole *orbis terrarum*.¹⁰⁵⁰

Due to the media type,¹⁰⁵¹ the compiler was forced to develop the depiction in the direction of longitude, crushing or reducing most of the drawing in the latitudinal sense. Hence the deformation assumed by the different geographical features, which are located relative to the cardinal points in a different position because the East takes the place of the North, thus shifting the entire orientation.¹⁰⁵² Scholars agree to a unified vision beyond the original version: the author began to draw on the entire roll: before the figure of lands and seas, and then he added the physical elements (topography and hydrography) and finally the roads.¹⁰⁵³ In this regard I would like to point out how the final stretch of the road near Palmyra remained “pending”. It is probably an error of the copyist.

Many localities in the map appear to be indicated not only by their name but also with a vignette, namely a symbolic representation.¹⁰⁵⁴ Among these symbols, three vignettes are clearly noticeable: the compiler wanted to highlight the three main cities of the Roman empire, precisely Rome, Antioch and Constantinople.¹⁰⁵⁵

¹⁰⁴⁹ Veg. *Mil.* III 6,4. Cfr. also Bosio 1983, 13.

¹⁰⁵⁰ Included India and Far East (Cina, Birmania and Ceylon). A tagline “*Hic Alexander responsum accepit. Usque quo Alexander* (Here Alexander got the response: until where, Alexander ?) indicated on the map, the latest limits of the earth.

¹⁰⁵¹ The disproportion between the length and the width lets to roll easy the roll in order to carry it around.

¹⁰⁵² In addition, some lands are much more extended in the map than in reality (like Italy itself, which occupies 5 fragments of 11), probably, as suggested by a passage of Ptolemy, in order to make the best areas important or where the population density is greater, to the detriment of other sparsely populated and easily compressible.

¹⁰⁵³ Bosio 1983, 36; Prontera 2003, 29-30; Talbert 2010, 86-122. Of course it has not been an easy work, as testified by many errors due to inaccurate reading or transcription of the names, to movements or repetition of localities.

¹⁰⁵⁴ For a total of 555 vignettes. See Levi 1967, 65-176 and 195-246 for a typological analysis.

¹⁰⁵⁵ Rome (Segm. IV) is represented by a crowned figure, seated on a throne and holding globe, spear and shield. The image and the inscription ROMA are enclosed within a double circle crossed in its lower part by the river Tiber, which flows at the foot of the throne. From the double circle twelve routes branch off twelve that bear 11 names of famous historic routes departing from the capital. Constantinople (Segm. VIII) is represented by a striking woman sitting on a throne also with helmet on his head and in his left hand holding a spear and shield. The tall monument in the shape of the tower, which completes the design with a statue on the top of it, has been interpreted by Miller (Miller 1916, 32), as the reproduction of the porphyry column that the emperor Constantine built there, while Levi (1967, 153) as the representation of a lighthouse. The name of the city is marked by a red color on the sides of the monument

Returning to the road system, it soon becomes clear its predominance on the map: it is extended in all three continents. The immense road network is marked with a series of straight red line segments of different lengths, joined together by elbow corners, which are used to indicate the stops touched by the road. In addition, every place name is accompanied by a number that represents the distance from the previous locality. Throughout the empire, its satellite countries and in Southern Gaul, the road measurement unit is the usual Roman mile.¹⁰⁵⁶ In the remaining part of Gallia the distances are indicated in *legae*, i.e. 1 *lega*= 2,222 m. In the entire Persia until the Indo river, the measurement unit is the *parasanga*, corresponding to 5,000 or 6,000 metres.¹⁰⁵⁷ It appears that there is no relation between the road segments length and the correspondent itinerant distance. In this case the compiler was probably influenced only by the space available in the support.

Dating

After accurate internal analysis it appears that the *Codex Vindoboniensis* 324 was composed around the end of the 12th -beginning of the 13th century but authorship, sources and purpose still remain an open issue.¹⁰⁵⁸ The same problems are faced in relation to the original Roman map due to internal chronological contradictions. For example Constantinople is mentioned, which was founded only in A.D. 328, but at the same time it shows *Pompeii*, which was not rebuilt after it was destroyed by the Vesuvius' eruption in A.D. 79. The cartographer also shows the towns of *Germania Inferior*, which were abandoned at the beginning of the 5th century A.D. There are also Christian references, as the mention of the Sinai desert, where Moses and the Israelites wandered for decades before entering the Promised Land. So, for these reasons, scholars have proposed (for the map archetype) different period and purposes, ranging from the 4th up to 9th century A.D. Recently, Talbert suggested that the lost original was, most likely, to have been produced for display in a ruler's public space, during the Tetrarchy period around 300 A.D.¹⁰⁵⁹ But, if the *Tabula* was created during Tetrarchy how it is possible to explain the presence on it of the name Constantinople and other internal incongruences? Ultimately, due to a lack of unequivocal evidences, the document's date, context and purpose still remain an open matter.

and at the image enthroned. However, west of this vignette, *Byzantini* is written in black color. Even Antioch (Segm. IX) appears as a figure seated on a throne with a golden halo and supporting with her right hand a spear. At the foot of it, a naked young man symbolizes the god Orontes, which is holding a vase from whom the river of Antioch takes its name, and whose course is marked next to a monumental aqueduct.

¹⁰⁵⁶ See chap. 5.1. Introduction.

¹⁰⁵⁷ The two numbers are given respectively by Herodotus (*Hdr.* VI.41) and Strabo (*Geog.* XI, 5). India has its own unit: the Indian mile.

¹⁰⁵⁸ Bosio 1983, 150-174; Talbert 2010, 123-132.

¹⁰⁵⁹ Talbert 2010, 149-150.

5.4.2.2. The road

In the *TP*, as introduced above only one road, marked by eight stations, appears to directly link Palmyra with Damascus (Fig. 5.13). The two *capita viae* are indicated with the vignette type of “two towers unified by a central body”, used probably to indicate *mansiones* and *mutationes* along the road.¹⁰⁶⁰



Fig. 5.13. Palmyra-Damascus in the *TP* (Frag. X).
(After <http://www.cambridge.org/us/talbert/index.html>)

The total distance of the route, presented on the map, is 212 miles (or approximately 317 km), which corresponds to *c.* 318 km registered using Google Earth.¹⁰⁶¹

The historian Pliny the Elder (1st century A.D.) reports only the distance between the two cities which is 176 Roman miles or around 261 km, without specifying the path.¹⁰⁶²

Since no milestones have been recovered along the route, modern scholars disagree on some stopping points of the route. In fact, only a boundary stone, carrying a Latin inscription and reused during the construction of the Omayyad castle's wall was discovered along the route at Qasr al-Heir al-Gharbi (for the identification of this site as *Heliaramia* of the *TP* see below). Dating to Hadrianic period (A.D. 117-131), this limestone stele marked the boundaries between Palmyra and the nearby city of Emesa.¹⁰⁶³ Most probably, it was important to fix the borders for practical purposes, in order to define the agricultural and/or pastoral territories of Palmyra for fiscal reasons. In fact, as testified by the famous Palmyra Tax Law, dated to A.D. 137, a tax has to be paid for grazing animals coming from outside Palmyrene territory.¹⁰⁶⁴

The second problem is represented by the uncertainty of the toponymi. Indeed as Thomas Bauzou has observed:

«...tout le triangle Palmyre-Homs-Damas a perdu sa toponymie antique entre l'époque omeyyade et l'époque moderne, c'est le cas d'oasis importantes comme Thelsea (Dumeir), Casama (Nebk?), Danaba (où donc?), Nezala (Qaryatayn). Seul rescapé: le minuscule fortin de

¹⁰⁶⁰ Levi 1967, 67-82; tipology A, I n. 2, p. 197.

¹⁰⁶¹ Moritz (1889, 24-25) refers 260 km.

¹⁰⁶² *NH*, 5.88: *Palmyra . . . a proximo Syriae litore CCIII mill. et a Damasco viginti Septem propius.*

¹⁰⁶³ *AE* 1939, 180; Schlumberger 1939, 63-64; *IGLS* V, 2252: *Fin[es] inter Hadriano[s] Palmyrenos et [He]mesenos.*

See also 1.1.

¹⁰⁶⁴ *CIS* 3913: G. 233-237, P. 149. For a discussion see chap. 4.4.2.

Nab, devenu Oneuatha, et qui s'appelle toujours 'Aneybeh, pérennité difficile à expliquer. Ce phénomène de renouvellement complet de la toponymie est propre aux steppes, les pays d'agriculteurs comme le Hauran ont conservé jusqu'à nos jours leur toponymie antique, qu'il s'agisse des villes ou de simples villages. C'est que la persistance de nombreuses communautés chrétiennes, descendant directes semble-t-il de la population de l'époque byzantine, montre que le Hauran ne fut jamais déserté. Ce n'est pas le cas du triangle Palmyre - Homs - Damas qui a certainement dû connaître une phase d'abandon significative affectant les terrains de pâture, les puits, jusqu'aux oasis : dans la plupart des cas où l'épigraphie ou les sources textuelles nous permettent de localiser un toponyme, nous trouvons un nom moderne sans aucun rapport avec l'ancien. Aussi, chercher à localiser les toponymes antiques de la région en les associant aux toponymes actuels qui leur ressemblent n'est pas, en l'absence d'autres indices concordants, une méthode satisfaisante».¹⁰⁶⁵

Heliaramia

According to the *TP*, the first stop at 32 miles was *Heliaramia*. The toponym has been identified as the modern city of Qasr al-Heir al-Gharbi, on the basis of a later literary source and the linguistic connection.¹⁰⁶⁶ In fact, a letter dated around A.D. 559-560 and addressed to Jacob Baradeo, bishop of Syria, mentioned *Sergius presbyter et archimandrita monasterii Haliurim*.¹⁰⁶⁷ Honigmann associated the Syriac name of the city *HLWRM* with the toponym of *Heliaramia* in the *TP*.¹⁰⁶⁸ This fits with the existence at Qasr al-Heir al-Gharbi of a Monophysite monastery attested by some archaeological remains and by epigraphy.¹⁰⁶⁹

The actual standing remains on the site belong to the Omayyad castle built in A.D. 727 by the Caliph Halicham Ibn Abd al-Malik,¹⁰⁷⁰ but a Roman military occupation of the site was hypothesised by the Schlumberger who first excavated it.¹⁰⁷¹ However, as seen above (chapter 4.3.1), Genequand has recently challenged the idea of a Roman occupation at Qasr al-Heir al-Gharbi. Therefore, according to him, the associated identification with *Heliaramia* of the *TP* is based on a general and late homonymy that still needs to be verified for the period before the 6th

¹⁰⁶⁵ Bauzou 1993, 50.

¹⁰⁶⁶ *Atlas* Map-by-map no.68, 1045; Bauzou 1989a, 386; Dussaud 1927, 265; Kennedy, Riley 1990, 218-219; Moritz 1889, 12; Poidebard 1934, 41; Schlumberger 1939a, 363 n.1. In Miller 1916, 915 the modern toponym is "noch unbekannt".

¹⁰⁶⁷ *CSCO.SS*, II, vol. XXXVII, 219.

¹⁰⁶⁸ *IJLS* V, pp. 239-240.

¹⁰⁶⁹ Schlumberger 1939a, 26-28 and 1986, 26; *IJLS* V, 2553.

¹⁰⁷⁰ This is attested by the inscription on the architrave door of the *khan* (*RCEA* I, 23, n. 27).

¹⁰⁷¹ Schlumberger 1939a, 1986.

century A.D.¹⁰⁷² Other scholars have hypothesised that the actual stop of *Heliaramia* corresponded to the nearby (c. 11 km S-E) site of the Harbaqa dam.¹⁰⁷³

In any case, two other water points attested before Qasr al-Heir al-Gharbi are Ain al-Beyda (site nr. 3) and Twale (site nr. 4).¹⁰⁷⁴ The last one is around 48 km from Palmyra which would fit perfectly with XXXII miles mentioned on the map. However, the ruins in both sites are simply fortified wells and not proper settlements. Without further evidences is very difficult to settle the problem.

Nezala

The *TP* notes that, coming from Palmyra, after 44 miles, the second stop was *Nezala*.

Nezala, in its alternative toponym of *Nazala*, is mentioned also in the *Notitia Dignitatum* as *castellum*, seat of the *Equites promoti indigenae*, under the control of the *dux Phoenicis*.¹⁰⁷⁵

According to some scholars, the location can also be identified with the place called Γοαρία mentioned by Ptolemy.¹⁰⁷⁶

The toponym has been related to the modern city of al-Qaryatayn,¹⁰⁷⁷ on the basis of some late (5th century A.D.) inscriptions consecrated to “the great God of *Nazala*” and a funerary monument dedicated by a certain Zenobios, dweller of *Nazala* and grand Priest.¹⁰⁷⁸

Like Palmyra and Damascus, the village is located in an oasis. It was then, already in ancient time, a perfect, natural, stop along an itinerary. Moreover, a close relationship between *Nazala* and Palmyra is attested since the Middle Bronze Age. In a cuneiform letter, found in the Mari archives (18th century B.C.) is mentioned a group of Sutei, nomads from the Euphrate region, who have pillaged “ta-ad-mèki ù na-sha-la-a-ki”, i.e. Tadmor (namely the Semitic name of Palmyra) and *Nazala/Qaryatayn*.¹⁰⁷⁹ The study of the Mari Archives has shown that the region between Palmyra and *Nazala*, at that time, represented the final part of a route network through the steppe, linking the Middle Euphrates (Khalabit/modern Halebiye, Dur-Yahdun-Lim; Terqa and Mari) to the reign of Qatna. Among three possible itineraries (the northern one started from Abbatum and passed by

¹⁰⁷² Genequand 2006, 65.

¹⁰⁷³ Kennedy, Riley 1990, 70-71; Butcher 2003, 163.

¹⁰⁷⁴ Cfr. Sites' sheets chapter 3.

¹⁰⁷⁵ *ND Or.* 32,23.

¹⁰⁷⁶ Ptol. *Geog.* 5,15,24. Stückelberger, Grasshoff 2006, 571. *BAtlas* Map-by-map no. 68, 1044 following Honigmann 1923, nr. 198, suggests to identify Goaria o Koaria as *Cehere*, the forth stop of the road. However, it must be noted that Ptolemy mentions a place called Ναζαμα in the Apamea area (*Geog.* 5,15,19) that Stückelberger and Grasshoff identify too as al-Qaryatayn.

¹⁰⁷⁷ *BAtlas* Map-by-map no. 68, 1046; Bauzou 1989a, 386, 1993, 48; Dussaud 1927, 264, 269, 282; Honigmann 1923, nr. 18; Jaussen, Savignac 1920, 65; Miller 1916, 816; Moritz 1889, 12; Poidebard 1934, 41. Musil 1928, 253 “but it's also possible that a former settlement, the ruins of which lie 2km south of Qaryatein, was called *Nezala*”.

¹⁰⁷⁸ Respectively *IGLS* V, 2697, 2700, 2702 and *IGLS* V, 2703. All come from the Sheik's house or his relatives' one.

¹⁰⁷⁹ Will 1992, 28.

Salamiyeh), the “middle” and the “low” ones ran through the oasis of Palmyra and *Nazala* that were able to guarantee supplies, both for men and animals, during travel.¹⁰⁸⁰

Danova

Twenty miles, or around 30 km after *Nazala*/Qaryatein there was the stop called *Danova*. The location is also mentioned by Ptolemy as Δάναβα/Αδάναβαβα (*Geog.* 5,15,24) and in the *Notitia Dignitatum* (*Or.* 32,31) as *castellum* seat of the *Praefectus legionis tertiae Gallicae*. The presence of a *legio III Gallicorum* in *Danavae* is confirmed also by another inscription coming from Sistov, ancient *Nicopolis* in *Moesia*.¹⁰⁸¹ This legion was one of the most “ancient” troops stationed in Syria. Since Vespasian until its dismissing by Elagabalus (A.D. 218-222), it was located at Resapha. Reconstituted by Alexander Severus (A.D. 222-235) it was transferred to Danaba as confirmed by the above-mentioned inscription.¹⁰⁸²

According to Musil, *Danova* has to be identified with Danabas mentioned in the Arab sources¹⁰⁸³ and with *Castrum Danabeum* in the Christian ones.¹⁰⁸⁴

The modern location is still a matter of debate. Two villages, very close to each other, have been proposed: Sadad and Mehin.¹⁰⁸⁵ It must be pointed out that at Sadad an inscription mentioning veteran soldiers has been found.¹⁰⁸⁶

From *Danova*, according to the *Itinerarium Antonini Augusti* (195,9 – 196,3), a second route leading to Damascus and passing through *Eumari*, *Geroda* and *Thelsa* branched out.¹⁰⁸⁷

Cehere

18 miles after *Danova* the ancient traveller could stop at *Cehere*. Modern scholars agree to identify this toponym with the modern town of Qara which corresponds to the Greek name Κάρα

¹⁰⁸⁰ Joannés 1997; Ziegler 2007, 313. At that time Palmyra was perhaps the most eastern city under the control of Qatna or it could have been a “free zone” between the two reigns (Joannés 1997, 411).

¹⁰⁸¹ *CIL* III, 755: *bonae memoriae Aureliae Marcellinae Oesc(ensis) pientissimae f(eminae), habens ius liberorum, filia q(uo)n(dam) Marcellini ex praef(ecto) leg(ionis) III Gallicae Danavae Damasco quae vixit ann(os) L. Turranius Leontius praesbyter coniugi benae merita memoriam et sibi v(ivus) f(ecit)*.

¹⁰⁸² Rey-Coquais 1978, 67 n. 323, 70 n. 356; De Ruggiero 1982, 1353; Pollard 2000, 22-25, 40-63 n. 141.

¹⁰⁸³ Musil 1928, 291-293.

¹⁰⁸⁴ Musil 1928, 23 n. 3, 129 n. 34: *episcopus Danaborum*.

¹⁰⁸⁵ For Sadad: *BAtlas* Map-by-map no. 68, 1044, followed by question mark; Bauzou 1989a, 385-386; Stückelberger, Grasshoff 2006, 571; Miller 1916, 816: «oder el- Hömme»; Moritz 1889, 23. For Mehin: Dussaud 1927, 263-271; Devresse 1945, 203; Poidebard 1934, 41. Gregory 1995-1997: 1995, 223-224 proposed instead Dumeir.

¹⁰⁸⁶ *AE* 1935, 118: Μάρκοι Αὔρελιοι Βεελιάδος Μολίμου καὶ Γόραφος καὶ Δίδας, (ο)ὔετρα(νοὶ) ὄμοροι, ν[αὸν] εἰργάσαν[το].

¹⁰⁸⁷ The *Itinerarium Antonini Augusti* is considered an *itinerarium scriptum* (or *adnotatus*), i.e. a list of stops and routes (also maritime ones) with their relative distances. It is dedicated to the emperor Caracalla (so 3rd century A.D.) but we have to admit later edits in order to explain some incongruence as the presence of toponyms such as *Dioclitianopolis* or *Constantinopolis*. Its practical purposes are far from being sure, since it seems more probable that it was a geographical inventory based on a toponomastic sequence of roads (Prontera 2003, 41).

on the basis of an inscription coming from the modern town of Yabrud, around 25 km to the south.¹⁰⁸⁸ It is a dedication, probably to the θεῶ μεγάλῳ Ἰάδρουδῶν from *Claudius Cassianus*, perhaps the same one who was *consul suffectus* at the end of the 2nd century A.D.,¹⁰⁸⁹ *Italos* (?) *Tamalatos*, son of *Seanios*, inhabitant of Qara (Κα[ρ]||ο<π>ο<λ>εῖτ<η>ς), and from *Ostarbelos* (?). The toponym of Qara is also attested in a Greek colophon that follows a Syrian text of 13rd century A.D., from the modern town of Qara itself.¹⁰⁹⁰

Casama

The fifth stop, located 20 miles from the previous one, around 30 km, was the place of *Casama*. It is mentioned both in the *Notitia Dignitatum Orientis* as a *castellum* seat of the *Equites sagittarii indigenae*,¹⁰⁹¹ and in Ptolemy.¹⁰⁹² Musil compared it to *Κουσαμ* of the Arabic sources.¹⁰⁹³

Scholars agree to locate it at the modern town of Nabk/Nebk.¹⁰⁹⁴ Miller, following Moritz's interpretation, located the toponym near Der Atije realizing that, as a consequence, the distance between the previous stop would have been only 9 km, or *c.* 6 miles.¹⁰⁹⁵

Ad Amana

After 20 miles from *Casama*, the next stop was the place called *Ad Amana*, mentioned as Ἀδαμάννα by Ptolemy.¹⁰⁹⁶ Musil observed that in the manuscript, between the 'Ad' and 'amana', there is a larger space even than in *Ad Medera*, suggesting that the original name was *Ad Amana* rather than *Adamana*.¹⁰⁹⁷ Miller, one of the main editors of the *TP*, explained the toponym as a place by (Ad) a river, which was named, *Amana*.¹⁰⁹⁸ This location is otherwise unknown. Moreover he proposed to recognise this place as *Calamona* of the *Notitia Dignitatum Orientis*,¹⁰⁹⁹ a suggestion strongly denied by Dussad who pointed out that «le nom de Calamona survit dans celui de Djebel Qalamoun...tend à disparaître à son tour, remplacé par celui de Djebel

¹⁰⁸⁸ *IGLS* V, 2709 = *AE* 1947, 145. *BAtlas* Map-by-map no. 68, 1044; Devresse 1945, 208 n. 8; Dussaud 1927, 264-67, 282; Honigmann 1923, nr. 198; Miller 1916, 816; Moritz 1889, 22; Poidebard 1934, 41. A place called Κοάρα is listed also in Ptolemy (*Geog.* 5,15,18) but located in Chalcide. On this see Dussaud 1927, 267.

¹⁰⁸⁹ *PIR*² I, 186, 827.

¹⁰⁹⁰ *IGLS* V, 2705.

¹⁰⁹¹ *ND Or.* 32,25.

¹⁰⁹² *Geog.* 5,15,24: Κάσαμα.

¹⁰⁹³ Musil 1928, 31 n.5.

¹⁰⁹⁴ *BAtlas* Map-by-map no. 69, 1060; Bauzou 1989a, 385, 1989b, 212 and 1993, 98 with question mark; Dussaud 1927, 264; Honigmann 1932, col. 1666-1668; Poidebard 1934, 41; Stückelberger, Grasshoff 2006, 571.

¹⁰⁹⁵ Miller 1916, 816; Moritz 1889, 17, 24.

¹⁰⁹⁶ *Geog.* 5,15,24.

¹⁰⁹⁷ Musil 1928, 235, 241.

¹⁰⁹⁸ Miller 1916, 817.

¹⁰⁹⁹ *ND Or.* 32,26.

Ma'loula». ¹¹⁰⁰ Ma'lula, 15 km N/N-W of Qtaife, is in fact the toponym proposed by Bauzou, respecting the exact distances given by the *TP* but admitting that the terrain would then have made the road connection longer. ¹¹⁰¹ Dussaud instead, proposed to locate it by the modern city of Qastal: «Nous avons une corruptione ou une deformatione locale d'un Ad Ammontem, qui nous indique la présence d'une source abondante et même d'un château d'eau, ce qu'on désigne en arabe par le terme qastal». ¹¹⁰²

Adarin

Adarin, 13 miles from the previous stop, can possibly be compared with Ατήρα of Ptolemy ¹¹⁰³ and according to Miller *Othara* of the *Notitia Dignitatum*. ¹¹⁰⁴

From *Adarin*, the *TP* depicts a branch that linked it to Emesa through *Ocurura* (15 miles), *Deleda* (15 miles) and *Laodicia Scabiosa*. According to Musil the copyist wrongly located this route, that in reality it should have started at the previous stop of *Adamana*. ¹¹⁰⁵

The editors of the *IGLS* have integrated, doubtfully in my opinion, this toponym with a very mutilated inscription coming from the *khan* of Nabk/Nebk. ¹¹⁰⁶ The site has been identified with modern Qtaife. ¹¹⁰⁷

Admedera

The last halt stop before reaching Damascus was *Admedera*, 10 miles to the south, or around 15 km. Scholars are divided between two possible modern locations: Dumeir and Quseyr. ¹¹⁰⁸ For the first one Musil suggested that «the appellation Ad medera may have been wrongly derived from an original *Ad Demera*». ¹¹⁰⁹ If the identification is correct, then this stop would have coincided with a stop along with a stop along the itinerary south of Jebel Rawaq. Dussaud affirmed that Dumeir

¹¹⁰⁰ Dussaud 1927, 264.

¹¹⁰¹ Bauzou 1989a, 384-385.

¹¹⁰² Same in *BAtlas* Map-by-map no. 69, 1058 and Poidebard 1934, 41.

¹¹⁰³ *Geog.* 5,15, 24.

¹¹⁰⁴ *ND Or.* 32,18 (*castellum*, seat of the *Equites Mauri Illyriciani*) according to Miller 1916, 817.

¹¹⁰⁵ Musil 1928, 245

¹¹⁰⁶ *IGLS* V, 2706: ΓΝΠΕΒΟ/ ΝΤΙΡΑ/ ΚΑΙΤΟ(Ε) ... , ΙΟΙ/ ΣΝΚΟΣΩΑΝ ...ΣΚΟΠ/ ΑΙΤΟΝ ΛΑΛ ...ΝΙΟΤΚ/ ΝΒΕΡΟ/ ΤΟΥΟ. As comment: «Lectures possibles selon Kr.: 3. Κ<ε>ῖτ<α> ?/ 4. ... <Ι>ωάν[νης ἐπί]σκοπ[ος ?] / 5. ... τ<ω>ν <Αδ>α».

[πινῶ]ν ? {cf. *Ad Darin* sur la Table de Peutinger}.

¹¹⁰⁷ *BAtlas* Map-by-map no. 69, 1056, followed by question mark; Bauzou 1989a, 384; Dussaud 1927, 264, 268; Honigmann 1932, col. 1666-1668; Miller 1916, 817: 'südlich von Kastal or südlich von Kaldu'; Poidebard 1934, 41.

¹¹⁰⁸ Quseir is considered in *BAtlas* Map-by-map no. 69, 1056, followed by question mark; Dussaud 1927, 264-265; Honigmann 1932, col. 1666-1668; Roussel, de Visscher 1942, 174.

¹¹⁰⁹ Musil 1928, 240, followed by Les Bas, Waddington 1870 n. 1870 = *IGLS* V, 2562; Miller 1916, 817; Moritz 1889, 13; Poidebard 1934, 41-42.

should instead be *Thelsae*,¹¹¹⁰ mentioned both in the *Itinerarium Antonini* (196,2) and in the *Notitia Dignitatum* (Or. 32,28), on the basis of an inscription found in the temple of Zeus, which refers to a member of a cavalry detachment and native of *Thelsae*.¹¹¹¹ The same author, however, admitted that it can be misleading to rely on this evidence alone, since another inscription mentions the inhabitants of *Goaria* too. A possible support for the identification of Dumeir as *Admedera* is the fact that the fort found nearby is 40 km from Damascus, a distance that perfectly corresponds to 26 miles indicated by the *TP*.¹¹¹² In any case, both suggested interpretations lead to a serious problem: the itinerary would have gone S-E and then W-S-W instead of going directly from Qtaife to Damascus following a natural (and easier) communication line. The identification is therefore, far from being ascertained.

Damaspo

Finally, after covering 26 more miles (around 39 km), the traveller arrived at Damascus. The name variant of *Damaspo* is probably a mistake by the copyist or could be a corruption.¹¹¹³

5.4.3. *Strata Diocletiana*

5.4.3.1. History of studies

During his explorations in the Palmyrena, between 1908 and 1915, Musil travelled along the road called by the Bedouins “voie des khans” that runs along the southern slope of the Jebel Rawaq between Palmyra and Damascus.¹¹¹⁴ This chain of forts, from which it takes its name, i.e. “road of the caravainserails”, had already been previously reported by Burton in 1872 and by Moritz in 1889.¹¹¹⁵ However, Musil was the first one to study these forts, register their plans and other information (for example water systems). He also noted many milestones along the road but he limited himself to only roughly signal their presence.¹¹¹⁶ Unfortunately, as outlined above, Musil had to travel in difficult conditions and through isolated and unsafe areas that did not allow him, either to record fort’s plans and architecture of all the castles nor to search all the milestones along

¹¹¹⁰ Dussaud 1927, 264-265.

¹¹¹¹ *OGIS* 628. Cfr. Roussel, de Visscher 1942, 182.

¹¹¹² Musil 1928, 240; Bauzou 1989a, 384: « Que Dmeyr soit déjà connue pour être l’ antique Thelsea n'est pas un obstacle une même localité peut avoir plusieurs noms».

¹¹¹³ Bauzou 1989a, 388.

¹¹¹⁴ Musil 1928.

¹¹¹⁵ Burton 1872, 363-365; Moritz 1889, 14-15. Strangely Bauzou appears not to be aware of this (1989a, 259).

¹¹¹⁶ Musil 1928, 95: «South of al-Hawa (site nr. 5) I noticed the first Roman milestones, but most of them were broken and crumbled, thus making the reading of even a single letter absolutely impossible». Further, at page 109 he also stated to have made a copy: «(Between Khan al-Trab and Abou Shamat) we noticed a Latin inscription on a fallen milestone. I made impression and a copy of it...At three o’ clock we passed another milestone...». Unfortunately it has not then been published.

the way or to copy their inscriptions.¹¹¹⁷ At that time the only milestones known attesting the existence of a *Strata Diocletiana* were two: one along the way from Palmyra to Arak/Erek and one from al-Bakhra.¹¹¹⁸ The first one to hypothesize a connection between the “voie des khans” and the *Strata Diocletiana* was Dussaud in 1927 on the basis of unpublished reports of the meahristes stationed at Palmyra.¹¹¹⁹ This idea would have been confirmed, only few years later, by two independent explorations carried out in the same year by Poidebard-Mouterde and Dunand.¹¹²⁰ These scholars, especially the latter, systematically traveled along the road, recording and coping all the inscriptions that let to both confirm the correspondence and to recovering the forts’ ancient toponymi.¹¹²¹ However, it has to be noted that, the results sometimes were very discordant.¹¹²² The study of the *Strata* and its forts was resumed by Bauzou in the 1980s-1990s, within a larger project on the roads of eastern frontiers of the Roman empire as the topic of his doctorate thesis.¹¹²³ His results, apart from a lot of new archaeological data, provided a critique *corpus* of the already available inscriptions and the discovery of more than twenty unknown ones.¹¹²⁴ This led to a reevaluation of the road itinerary and questioned its own existence. In fact, it has to be noted that milestones have been only recovered as far as Khan Abou Shamat. I will revisit these issues below.

5.4.3.2. Structure of the road

Traces of the roadway itself are not clearly detectable. Except for some parts of the middle section of the route (between al-Basiri and Khan al-Trab), the road is no longer visible on the ground because the stones borders have been lost or reused by the Bedouins.¹¹²⁵ Poidebard noticed that traces of pavement have been found along some marshy areas, especially when crossing *wadis*.¹¹²⁶ However, some data can be recovered thanks to the aerial photos,¹¹²⁷ and at its final stretch near

¹¹¹⁷ Poidebard 1934, 35; Bauzou 1989a, 259-260; 2000b, 79-80.

¹¹¹⁸ Respectively Sitlington Sterrett 1888, 436 no. 634 = *CIL*, III, 6719 = Thomsen 1917, 28 nr. 52 = Mouterde 1930-1931, Pl. II nr. 2 = Bauzou 1989a, nr. 107 = Bauzou 1993, 28-29 Inscr. A (Fig.1) and *CIL*, III, 6726 = Thomsen 1917, 29 nr. 57a1 = Bauzou 1989a, nr. 111 (Appendix, m). This second one is actually not *in situ*, probably coming from the stretch between Khan al-Hallabat and Palmyra. I will go back on this below.

¹¹¹⁹ Dussaud 1927, 255. According to him the road from Palmyra passed through al-Bakhra then down to Dumeir and Damascus. Cfr. also Bauzou 1989a, 260 n. 7.

¹¹²⁰ Mouterde (who collaborated with Poidebard) 1930-1931, Poidebard 1934, 35-36 and Dunand 1931. For the fact that the two researches have been carried out independently see Mouterde 1930-1931, 221 n.1 and Poidebard 1934, 36. Cfr. also Bauzou 2000b and chapter 2.

¹¹²¹ Cfr, Gazetteer I.a.

¹¹²² Dunand 1931, 579-584.

¹¹²³ Bauzou 1989a, 1989b, 1993 (results from 1990). See also chap. 2.

¹¹²⁴ Bauzou 1989a, Nr. 39-40, 43, 47-48, 52-54, 56, 91-93, 95, 99-103 (= Bauzou 1993, 34-35 Inscr. G (Fig.5), 105, 112; Bauzou 1993, 33 Inscr. E (Fig. 4), 47 Inscr. L (Fig. 7).

¹¹²⁵ Poidebard 1934, 38.

¹¹²⁶ Poidebard 1934, 38, Pl. XXVIII; Bauzou 2000b, 82 (Fig.).

¹¹²⁷ Poidebard 1934, Pl. XXIX.

the oasis of Palmyra, from Google Earth (Fig. 5.14). These results, combined with milestones' recovery, provide a general idea of the road (Fig. 5.15).

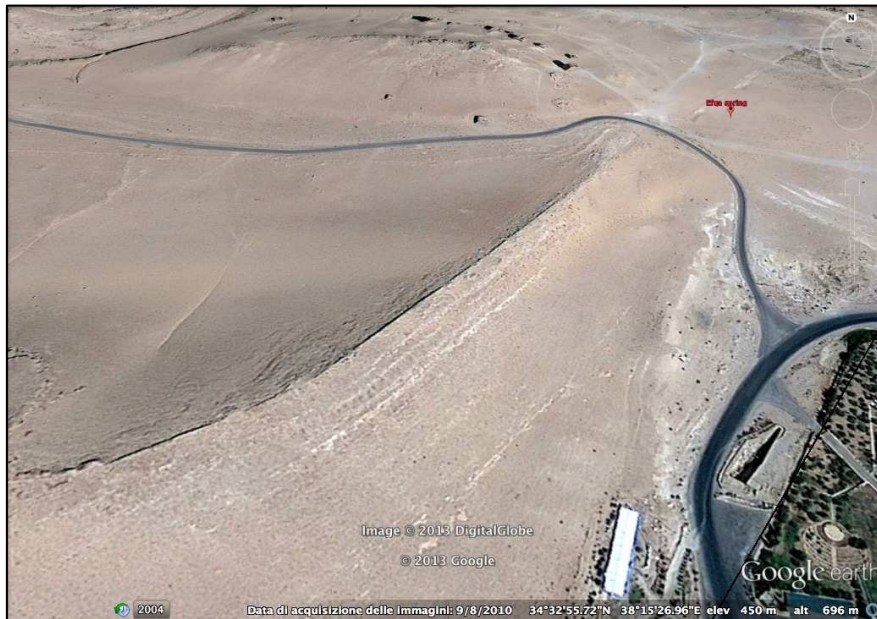


Fig. 5.14. Roadway by the Efqqa spring.
(Image produced from Google Earth)

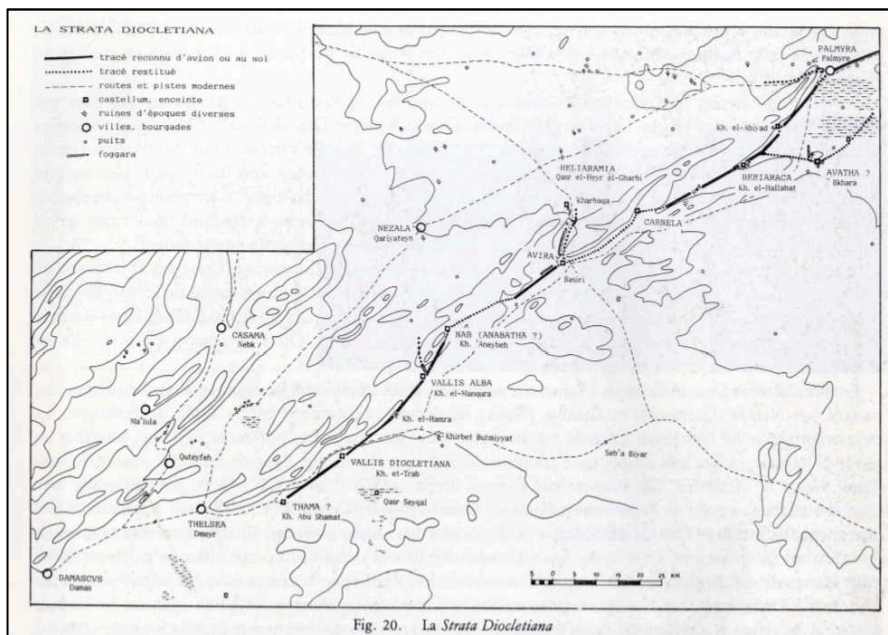


Fig. 5.15. The *Strata Diocletiana*'s roadway
(Bauzou 1989b, Fig. 20)

The route runs all the way, around 500 m distance from the southern side of Jebel Rawaq. Its structure is typical of a Roman road in pebbly desert regions: the chosen path was cleared of all surface stones and boulders which were then regularly amassed into two perfectly parallel sides at

a distance of about 6.5 m, acting as the road's boundaries. In some areas, the width is slightly different, and the borders are made of limestone blocks embedded in the soil.¹¹²⁸ Such a structure (type 3), as we have seen above, is pretty common for Near East' roads, as for example the *Via Hadriana* from Antinoopolis to Berenike in the Egyptian Eastern desert.¹¹²⁹

The road is characterized by the presence along it of several forts along the route whose standing remains can be dated from the end of the 3rd century and whose ancient names are attested by milestones' inscriptions.¹¹³⁰ The two structures (road and forts) appear to be strictly connected in an integrated organized system. I will go back to this in the following paragraph.

In any case the forts, evenly distributed all along the roadway, apart from their intrinsic military function, could guarantee regular resting point and water supply for any type of travellers.¹¹³¹ Additional water points, such as al-Hamra and al-Hawa were also available.¹¹³²

Watchtowers, both as part of the forts installations or as single structures, have been recovered along the road.¹¹³³ They were primarily used to control traffic and water resources and may have communicated through optical signal, as was the case for the Eastern Egyptian desert along the road from Myos Hormos to Koptos and in the Kerak Plateau.¹¹³⁴ Banning has suggested a function of watchtowers, at least for the Wadi al-Hasa area, connected to agricultural and pastoral pursuit.¹¹³⁵

An analysis of the milestones' inscriptions assists in trying to establish how the road was internally organized and possible developments. Since I was not able to carry out personal autoptic analysis, I won't reproduce here all the milestones' texts, for which I refer to Bauzou's 1989a second volume and my Appendix. Therefore, only general considerations will be presented. Departing from the usual, but following Bauzou's method, the overview will proceed from south to north.

Recovered milestones consist on limestone stones coarsely cut in the shape of a cylindrical column with cubic base ("borne"), most often in the form of an elongated stele so thick as it is

¹¹²⁸ Poidebard 1934, 38, Pl. XXVI 2-3.

¹¹²⁹ Sidebotham 2011, 136-140.

¹¹³⁰ See chap. 3 and Gazetteer 1.a.

¹¹³¹ For forts' water supplies cfr. 4.3.2.

¹¹³² Cfr. Appendix.

¹¹³³ Respectively, at forts' sites: Khan al-Abyad, Khan Aneybeh, Khan al-Manquora and al-Bakhra (cfr. Chapter 3, Table 2), along the road between Khan al-Trab and Khan al-Manquora at mile 3 and 8 (al-Hamra); Khan al-Manquora and Khan Aneybeh at mile 4 (from Khan al-Manquora-cfr. Appendix).

¹¹³⁴ Sidebotham 2011, 140-144 (for Egypt) and Clark, Parker 1986; Parker 2006. 31-33, 46-47 (for the *Limes Arabicus*). Cfr. Also Reddè, Bauzou 1989, 490-497. Strangely Bauzou (1989b, 219), who is the first to annotate the presence of watchtowers along the road, suggested that such system did not exist along the *Strata* because there were no watchtowers. Perhaps he was referring only to the optical signaling system. Unfortunately the scarce evidences cannot confirm both interpretations.

¹¹³⁵ Banning 1986, 36; 1987, 52.

wide (“stèle”). From al-Basiri until Palmyra they consist almost only of columns without base (“fût cylindrique”).¹¹³⁶ They are usually grouped in more than one exemplar and sometimes overscribed. One particular feature is that in the S-W sector (al-Basiri/Khan Abou Shamat) milestones are grouped in three identical exemplars, both belonging to Tetrarchy or Constantine period. This use seems to not be attested elsewhere.¹¹³⁷

It should be noted that milestones have been discovered only from the 3rd km N-W of Khan Abou Shamat (11 miles from the *caput viae* of the stretch, i.e. Khan al-Trab). From there, the fort of Dumeir is distant only *c.* 14.5 km. and Damascus *c.* 26 km from the latter.¹¹³⁸ There must have been road connecting them but no milestones have actually been recorded.¹¹³⁹

From Khan Abou Shamat, except for a quite big hiatus (21 miles = *c.* 32 km) between Khan Aneybeh (from mile 10) and Khan al-Qattar (until mile 12 from al-Basiri),¹¹⁴⁰ milestones are regularly found every mile up to Palmyra with a branch diverting from Khan al-Hallabat toward al-Bakhra. Between Abou Shamat and the Efqa spring (apparently the arrival point in the oasis) the total distance is *c.* 164.5 km. and the average Roman mile is 1.482 km.¹¹⁴¹ Strictly speaking the first milestone mentioning a *Strata (Diocletiano and Maximiano)* has been recovered 6 miles N-E from Khan al-Trab.¹¹⁴²

Between Khan Abou Shamat and Khan al-Trab all the inscriptions found dated to the Tetrarchic period (A.D. 293-305) and the dedication is in dative. The distances are calculated from the latter one (*caput viae*).¹¹⁴³

From Khan al-Trab to Khan al-Manquora almost all milestones bear the word *ISTRATA* and dated to A.D. 293-305 (+ genitive) and A.D. 324-326 (+ dative - Constantine time).¹¹⁴⁴ The two locations are both *capita viae* (mile 8).¹¹⁴⁵

From Khan al-Manquora to Khan Aneybeh all milestones still attest the term *ISTRATA* and dated to A.D. 293-305 (+ genitive) and A.D. 324-326 (+ dative - Constantine time), but at mile 3 (from Khan al-Manquora) a repair dating between November 308 and May 309 A.D. (Galerius and

¹¹³⁶ For examples see Dunand 1931, 235; Pl. XXIII-XXV; Cfr. Bauzou 1989a, 266, Pl. 77-89.

¹¹³⁷ Bauzou 1989a, 401.

¹¹³⁸ Dumeir can perhaps be connected to *Thelsae* mentioned in the *ND Or.* 32.28 and in the *Itinerarium Antonini* 196:2 (Dussaud 1927, 264-265). Cfr. 5.4.2, *Ad Medera*.

¹¹³⁹ Bauzou 1989b, 212.

¹¹⁴⁰ Appendix, e-f. The road is attested there by aerial photos: Poidebard 1934, Pl. XXIX. It is not possible to establish the reasons for such a long lack centered at al-Basiri (Bauzou 1989a, 283-283). As seen in chap. 3, al-Basiri is a very damaged site that presents several historical and archaeological issues.

¹¹⁴¹ For the distances and value of the Roman mile in each sector I refer to Bauzou's measurements (Bauzou 1989a, 295).

¹¹⁴² Dunand 1931, 237, 419; Bauzou 1989a, nr. 23.

¹¹⁴³ Appendix, b.

¹¹⁴⁴ The only exception is above-mentioned milestone reporting *STRATA*, see n. 1142.

¹¹⁴⁵ Appendix, c.

Licinius as *Augusti*, Maximinus Daia as *Caesar*) is attested.¹¹⁴⁶ Again both sites are *capita viae* (mile 5).¹¹⁴⁷

Between Khan Aneybeh and the gap before al-Basiri (from mile 10 to 21 from Khan Aneybeh), all milestones report *ISTRA*.¹¹⁴⁸ The numbering is calculated apparently only from Khan Aneybeh (*caput viae*). Most of them dated to A.D. 293-305 (+ genitive) and A.D. 324-326 (+ dative-Constantine time), but one milestone at mile 2 may date from A.D. 306-307 (Maximian and Severus *Augusti*)¹¹⁴⁹ as well as two milestones at mile 4 and 6 maybe to A.D. 305-306 (*Constantio et Maximiano*).¹¹⁵⁰ Surely an inscription at mile 5 attests a repair under the latter one.¹¹⁵¹

Until mile 13 from al-Basiri toward Khan al-Qattar no milestones are attested. After this point and until Khan al-Hallabat the milestones show again the term *Strata Diocletiana*. However, unlike that between Khan al-Trab and Khan al-Manquora the name is not followed by a dedication to the emperors in dative but only the indication of distance between two locations, suggesting a dating after A.D. 284.¹¹⁵²

At Khan al-Hallabat milestones clearly display that one branch of the road lead to Palmyra and one to al-Bakhra. Toward Palmyra only at 3.6/3.8 km N-E of Khan al-Hallabat (mile 2), the term *Strata Diocletiana* is registered.¹¹⁵³ After this point the remaining milestones are not in good condition, and often almost illegible, so it is not easy to date them. They seem to show repair of the road between A.D. 309-311 (*Constantine and Licinni Aug.*)¹¹⁵⁴ and between A.D. 324-326.¹¹⁵⁵ The *terminus* of the branch could have been the Efqa spring or the Bel temple, after respectively 19 or 20 miles.¹¹⁵⁶

From the Khan al-Hallabat/al-Bakhra stretch, only three milestones have been recovered *in situ*, 5 km E/N-E of Khan al-Hallabat, at mile 7, attesting the name *Strata Diocletiana*.¹¹⁵⁷ Since the calculation is made from al-Bakhra it is not clear if the branch separated from north of Khan al-Hallabat at mile 2 or at the site itself. If the first one is the right option we can agree with Bauzou who suggested that only this part of the road was strictly the *Strata Diocletiana*.¹¹⁵⁸ In the

¹¹⁴⁶ Dunand 1931, 424; Mouterde 1930-1931, 224 nr. 11; Bauzou 1989a, nr. 51.

¹¹⁴⁷ Appendix, d.

¹¹⁴⁸ Appendix, e.

¹¹⁴⁹ Dunand 1931, 427; Bauzou 1989a, nr. 65.

¹¹⁵⁰ Dunand 1931, 428-429; Bauzou 1989a, nr. 69, 72.

¹¹⁵¹ Dunand 1931, 241, 428; Bauzou 1989a, nr. 71.

¹¹⁵² Appendix, f.

¹¹⁵³ Dunand 1931, 243, 433-434; Bauzou 1989a, nr. 90, 1993, 34 Inscr. F.

¹¹⁵⁴ Because of the mention of *Galeria Valeria* (Bauzou 1989a, nr. 94, 96).

¹¹⁵⁵ Since *Caesares* were: *Flavius Iulius Crispus, Claudius Constantinus et Constantius*. Perhaps even in one case until A.D. 337 (Bauzou 1989a, nr. 102. Appendix, g).

¹¹⁵⁶ (Bauzou 1989a, 291-292).

¹¹⁵⁷ These were Bauzou's new discovery (Bauzou 1989a, nr. 91-93; 1993, 34 Inscr. G). Appendix, h.

¹¹⁵⁸ Bauzou 1989a, 265, 359-360.

following paragraph the consequences will be explored. It is interesting here to note that two out of three milestones (one is illegible) are over-scribed: above the “usual” construction *Strata Diocletiana* + distance between the two point, there is a dedication in dative to Diocletian and Maximian as *Augusti*, Costantius Chlorus and Galerius as *Caesares* (A.D. 293-305), like those attested between Khan Abou-Shamat and Khan al-Trab and the unique milestone between Khan al-Trab and Khan al-Manquora.

5.4.3.3. Myth or reality?

I intend to deal here with the issue of the existence of a road named *Strata Diocletiana*, while in the following paragraph I will discuss its role and relating implications in the long-standing debate over the concept of *limes*, especially in Late Antiquity.

The discovery of the *Strata Diocletiana* began in 1882 when the American Wolfe expedition found, northeast of Palmyra on the road toward the oasis of Arak/Erek, a milestones bearing the Latin inscription: *Strata Diocletiana a Palmyra Aracha M VIII*.¹¹⁵⁹ Immediately scholars compared it with that depicted in the *TP* (Frag. XI) connecting Palmyra to Sura on the Euphrate via *Harac* (= Arak/Erek indeed/ XVIII miles), *Oruba* (XXII miles),¹¹⁶⁰ *Cholle* (XXII miles)¹¹⁶¹ and *Risapa* (XX miles).¹¹⁶² However, after more than a century, no other inscriptions mentioning a *Strata Diocletiana* have been recovered northern than that point.¹¹⁶³

A few years later another milestone mentioning the road of the same name was attested from al-Bakhra.¹¹⁶⁴ Bauzou has recently pointed out that it is not *in situ* but coming from the stretch between Khan al-Hallabat and Palmyra.¹¹⁶⁵ However, at the beginning of the 20th century, Thomsen suggested that one route called *Strata Diocletiana* ran from the Euphrate (Sura) to Bosra via Palmyra and Namara.¹¹⁶⁶ The scenario was modified by Dunand’s discovery in 1925 of an isolated milestone 8 km N-E of Sa’ne in the Hauran recording a *Strata Diocletiani et Maximiani MXC(?)III*.¹¹⁶⁷ This led him to extended the road until al-Azraq, appreciating that at Khan al-Manquora the road divided in two branches: one going through Khan al-Trab toward Damascus

¹¹⁵⁹ Sitlington Sterrett 1888, 436 no. 634 = *CIL*, III, 6719 = Thomsen 1917, 28 nr. 52 = Mouterde 1930-1931, Pl. II nr. 2 = Bauzou 1989a, nr. 107 = Bauzou 1993, 28-29 Inscr. A (Fig.1).

¹¹⁶⁰ = Taybé (Clermont-Ganneau 1901, 72).

¹¹⁶¹ = al-Hallul (Konrad 2008, 348).

¹¹⁶² = Resafa (Konrad 2008, 436-438). Clermont-Ganneau (1901) was the first to connect the two roads.

¹¹⁶³ Only one illegible milestone (*CIL*, III, 13614) has been recorded in the last century but not dating to the Tetrarchy period (Bauzou 1993, 30 n.7).

¹¹⁶⁴ *CIL*, III, 6726 = Thomsen 1917, 29 nr. 57a1. It was not entirely understood.

¹¹⁶⁵ Bauzou 1989a, nr. 111 (Appendix, m).

¹¹⁶⁶ Thomsen 1917, 28-29, Nr. XII. Cfr. also Von Oppenheim 1899-1900, 225-226.

¹¹⁶⁷ Dunand 1931, 228 (the milestone was noted firstly in 1918 by the herdsman Parrot); Bauzou 1989a, n. 001; 1993, 32 Inscr. D (Appendix, a).

and one going southward, east of the Jebel Druze, to al-Azraq. The itinerary passed by Bîr Djouef, Tell Makhoûl, Djebel Seis, Qasr al-Abyad, Zalaf, Ghadîr el-Benât, Namara, Sa'ne, Imtân El-A'nât, Deir el-Khaf and Tell 'Aşfâr (Fig. 5.16).¹¹⁶⁸

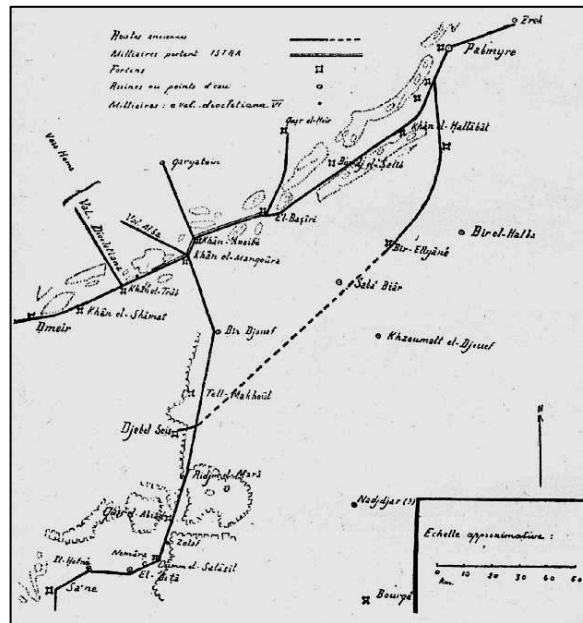


Fig. 5.16. The *Strata Diocletiana*'s itinerary according to M. Dunand. (Dunand 1931, 233)

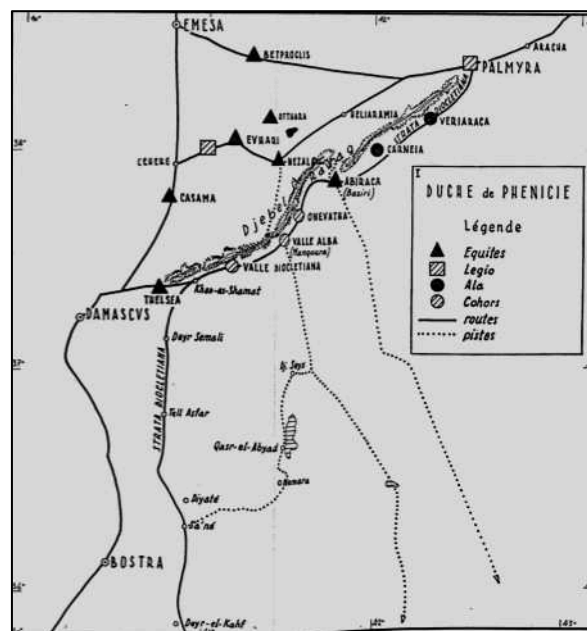


Fig. 5.17. The *Strata Diocletiana*'s itinerary according to D. Van Berchem. (Van Berchem 1952, 131)

¹¹⁶⁸ At Bir Djouef there was a direct connection (coming from the south) to Khan Abou Shamat and therefore to Damascus (Dunand 1931, 228-235). I have maintained here the modern transliteration given by the author, apart for Qasr al-Abyad and Sa'ne.

Dunand's idea, was strongly criticized by Van Berchem who retained al-Azraq as final destination but proposed that the road diverted at Khan Abou Shamat through Deyr Semali, Tell Asfar, Diyaté and of course Sa'ne, Deir el-Kahf (Fig. 5.17).¹¹⁶⁹ It would have followed all the forts of south of the *Strata* that present similar constructing features. This on the basis that the road could not have been constituted by more than one continuous path. His interpretation became the classical one.¹¹⁷⁰ However, can this idea still be retained? The name *Strata*, even considering both milestones mentioning *Strata Diocletiana* or *Strata Diocletian[o] et Maximian[o]*,¹¹⁷¹ is attested from the isolated milestones of Sa'ne, then by the isolated one between Khan al-Trab and Khan al-Manquora (among all other milestones bearing *Istra*), between al-Basiri and Khan al-Hallabat, between Khan al-Hallabat and al-Bakhra and finally the last one at 8 miles north of Palmyra on the way to Arak. It is difficult to assume that all these milestones were connected with the same named road for more than 290 km, even more to suggest that it continued up to the Euphrates. The name itself is very difficult to explain. Normally the word *strata* was used individually around the empire in its general sense of paved road.¹¹⁷² Should *strata*, in this case, instead be considered as a proper name? In the Republic and Early Empire the custom of giving public infrastructures names formed with the gentile of the constructor is attested but mainly in Italy.¹¹⁷³ In Near East the only possible example, i.e. the *Via Nova Traiana* is actually a name given by modern scholars on the basis of inscriptions mentioning a *Traianus ... uiam novam ...*¹¹⁷⁴ Therefore, this use in the Eastern regions is unknown, the *Strata Diocletiana* would have been an *unicuum*.¹¹⁷⁵ Instead, it should probably to be considered, as rightly pointed out by Bauzou: «pas un nom propre. C'était simplement une façon concise, de désigner la route, correspondant au langage courant des militaires et qui peut s'appliquer à n'importe quelle route du moment qu'on veut dire que le travaux ont été ordonnés par Diocletian».¹¹⁷⁶ However, it is very interesting that only in this stretch of the eastern frontier such reference exist. A lot of milestones dating to Diocletian time

¹¹⁶⁹ Van Berchem 1952, 14-15. The whole path would have remained in the 100mm annual rainfall's regime which allow to permanently settle the area.

¹¹⁷⁰ Chevallier 1972, 249; Luttwak 1976, 143; Parker 1986, 257; 1987, 38 Fig. 2; Starcky, Gawlikowski 1985, 69; Miller 1993, 183-184 (al-Azraq then Dumatha). Fales 1997, 130-132 reports Dunand's path. Still after Bauzou's studies: Eadie 1996, 75-75.

¹¹⁷¹ The first is attested all along the stretch from al-Basiri to 3.8 km North of Khan al-Hallabat . The latter is mentioned only once between Khan al-Trab and Khan al-Manquora (Bauzou 1989a, nr. 23). The dative has been integrated on the basis of the dative gave for the two *Caesares* (*Constantio et Maximiano Caesaribus*).

¹¹⁷² *AE* 1958, 123, *CIL*, VIII, 10056 = *AE* 1958, 123 (*Africa Proconsularis*); *AE* 1999, 453 (*Latium et Campania, Regio I*); *CIL*, II, VII, 133 (*Baetica*); *CIL*, III, 1482 = *AE* 1986, 309a, *CIL*, III, 11341 (*Dacia*); *CIL*, III, 11342 (*Pannonia Superior*); *CIL*, IX, 5348 = *AE* 2001, 857, *CIL*, VIII, 21993 (*Picenum, Regio V*); *CIL*, X, 1885 = *AE* 1988, 321 (*Apulia et Calabria, Regio II*); *CIL*, X, 4650 = *AE* 1993, 490 (*Latium et Campania, Regio I*); *AE* 1994, 1724 (*Galatia*).

¹¹⁷³ For example the aqueduct named *Aqua Claudia* or roads as the *Via Appia* and *Via Aemilia*.

¹¹⁷⁴ *ILS* 5834. Bauzou 1993, 28 n. 1.

¹¹⁷⁵ Bauzou 1993, 27-28; 2000b, 81.

¹¹⁷⁶ Bauzou 2000b, 82.

have been recovered in southern Syria and Jordan but none of them bears a similar formular.¹¹⁷⁷ Perhaps the real solution escapes us.

Moreover, as it is revealed from the inscriptions recovered between Khan Abou-Shamat and Palmyra, the road does not even bear all the same name: milestones attest the words *Strata Diocletian[o] et Maximian[o]*,¹¹⁷⁸ *Istra* and *Strata Diocletiana*. In relation to the second term Poidebard and Mouterde suggested to develop it as *Istra(ta)*, considering it as a variation for *Stra(ta)* which is the case of «prothèse de l'i devant l's impure».¹¹⁷⁹ According to Dunand, instead, it should be considered as I (= *Prima*) *Strata*.¹¹⁸⁰ The first interpretation is the one commonly accepted.¹¹⁸¹ Moreover, Poidebard and Mouterde considered *Istra* in some cases as an ancient inscription **Castra* rearranged.¹¹⁸² According to Bauzou, despite his new autoptic examination, this hypothesis could not be proved at all.¹¹⁸³

Bauzou suggested that the name *Strata Diocletiana* qualified a road(s) locally arranged by Palmyrene military authorities under Diocletian. In sectors outside Palmyrene direct responsibility, and under other local controls, the roads were simply called *Strata* or *Istrata*.¹¹⁸⁴

This means that by the end of the 3rd century the sphere of Palmyrene control was confined to a very much smaller area than previous centuries. Al-Basiri would have been then the limit of this command.¹¹⁸⁵ It is worth noting however, that despite what seems the prominent role of al-Basiri, the fort of Khan al-Manquora is bigger and probably more suitable to allocate a cavalry cohort.¹¹⁸⁶ In any case, to support Bauzou's hypothesis, it has to be recalled that while the forts along the road appear to be roughly contemporary, i.e. end of 3rd - beginning of the 4th century and belonging to the so-called *quadriburgium* architectural type,¹¹⁸⁷ they display a somewhat clear typological distinction that divides them in two subgroups. In the northeast half of the series, the forts of Khan al-Abyad, Khan al-Hallabat and Khan al-Qattar have small fan-shaped corner towers (Type 5.1), while in the south-west section, Khan Aneybeh, Khan al-Trab and Khan Abou Shamat, present square-shaped corner towers (Type 5.2). This can be connected with different stretches of

¹¹⁷⁷ They show the usual dedication in dative to the *augustii* and *caesari*. As examples see *AE* 2009, 1612, ZPE 62, 255=*AE* 1987, 971 (Umm al Jimal); ZPE 113, 258=*AE* 1996, 1615 (Umm el-Quttein); ZPE 113, 260=*AE* 1996, 1618 (al-Qihati); ZPE 65, 234=*AE* 1987, 967 (Umm al Qittayn). They are not dissimilar from those found between Khan Abou-Shamat and Khan al-Trab.

¹¹⁷⁸ Bauzou 1989a, nr. 23. The dative has been integrated on the basis of the dative given for the two *Caesares* (*Constantio et Maximiano Caesaribus*).

¹¹⁷⁹ Mouterde 1930-1931, 223.

¹¹⁸⁰ Dunand 1931, 579-580.

¹¹⁸¹ Van Berchem 1952, 14 and Bauzou 1989a, 263, 361; 1989b, 212; 1993, 30 n. 9; 2000b, 81.

¹¹⁸² Mouterde 1930-1931, 222; Poidebard 1934, 50.

¹¹⁸³ Bauzou 1989a, 263, n. 16.

¹¹⁸⁴ Bauzou 1993, 26.

¹¹⁸⁵ Appendix.

¹¹⁸⁶ Sites' sheets chapter 3.

¹¹⁸⁷ An exception within this homogenous system is represented by Khan al-Manquora (Type 4.2).

the road attested by milestones (*Strata Diocletiana* vs *Istra/ Strata*), possible relating to two different building programs.¹¹⁸⁸ Perhaps, the garrison stationed in Palmyra built the northern forts (N-E of al-Basiri) and settled milestones bearing *Strata Diocletiana*, while a unit based in Damascus or Bosra was responsible for forts' construction south of al-Basiri and for milestones recording only *Strata* and *Istra*. Bauzou suggested, based on general architectural similarities between these forts and those built in the Danubian region (ex. *Dinogetia*), that the manpower employed was the same. This would have explained the reason why, according to the scholar, the forts of the *Strata Diocletiana* appear not to be integrated with the surrounding environment. The fact that Diocletian and Galerius employed Danubian troops for the Persian war in A.D. 298, which were also attested together with other units in al-Azraq for a road construction (*praetensio colligata*) between Bosra and Dumatha (al-Jawf), would support his idea.¹¹⁸⁹ However, the inscription has been recently pre-dated to the Aurelian period, and connected with the restoration of the imperial authority over the wide territory controlled by Palmyra, hence the indication of the itinerary mentioned on the inscription. The word *praetensio* should instead be interpreted as "the fact of being in the first fighting line".¹¹⁹⁰ Moreover, there is no reason to think that the forts were not integrated with their environments.¹¹⁹¹

In any case, it seems very difficult to re-connect to this scenario the distant and isolated milestone (125 km) near Sa'ne. For the sake of argument, it has to be admitted that the inscription itself is problematic. The number is far from being sure. The *C* can be interpreted also as *U* leading to consider the distance 19 miles instead of 94.¹¹⁹² Furthermore, Dunand noted that the milestone is not connected to any ancient remains and it is not associated with the site of Sa'ne but with a road, locally named *Darb el-Madraj*, connecting Rusheydeh and Namara, not orientated N-S like the *Strata*, but instead E-W.¹¹⁹³ These questions are definitely still open and may never be concluded answered as the milestone is actually lost.¹¹⁹⁴

If a distinct "road of Diocletian" that was under Palmyrene local military control, is even to be conceived, we have to admit that it was made of many stretches: one al-Basiri/Khan al-Hallabat then one going north through Palmyra and one diverting toward al-Bakhra and bypassing the city, both toward Arak where at some point they attached to an old itinerary organized much earlier, in

¹¹⁸⁸ Lander 1984, 255; Bauzou 1989a, 355-356. Cfr. also chapter 3.4.1.2.

¹¹⁸⁹ *AE* 1987, 964 = *AE* 1994, 1797 = *AE* 1996, 1623 = Bauzou 1996. Bauzou 2000b, 89.

¹¹⁹⁰ *AE* 2001, 1976. Christol, Lenoir 2001

¹¹⁹¹ Gregory 1995-1997: 1995, 241-241; Gregory 1996; Lenoir 2011, 378.

¹¹⁹² Bauzou 1989a, Nr. 001 (comment); Bauzou 1993, 33.

¹¹⁹³ Dunand 1931, 228. Cfr. also Bauzou 1993, 33. On the Roman fort at Sa'ne see Lenoir 2003.

¹¹⁹⁴ Bauzou 1993, 32 n.12.

the 1st century A.D. under Vespasian.¹¹⁹⁵ Of course a road connecting al-Bakhra to Palmyra existed too. In both directions, anyway, the passage may have been a problem since it has to pass through the Sebkhath al-Mouh. In normal years the Sebkhath's surface is around 330 km² and can rise up to 510 in really wet ones. Even during dry periods the phreatic level, fed by three water sources, merges in winter making the area impossible to cross. In the summer months, due to high temperatures, the solutes, transported during the rains of winter, evaporate causing a concentration of salt in the surface that represents a natural obstacle for animals, especially camels.¹¹⁹⁶ This is why two alternative routes are known, from Palmyra, to reach the Euphrates south at Hit.¹¹⁹⁷ One north of the Sebkhath and one south, depending on the season. Both re-joined 22 km S-E at Umm al 'Amad. In a similar way, perhaps it can be suggested that also the two branches of the *Strata* (Khan al-Hallabat-Palmyra-Arak/Khan al-Hallabat-al-Bakhra-Arak) were conceived as two alternatively seasonal routes. The unnamed fort identified by Bauzou around 12.5 km northeast of al-Bakhra, presenting architectural similarities with other fort along the *Strata*, could, possibly, have been a stop along one or both roads.¹¹⁹⁸

As emerges from the analysis, the situation is complex and far from clear. One of the main problems is that not all milestones have been recovered and many of them are damaged, making the reading and dating a big challenge. Therefore any assumptions, made here, must be considered only provisional since new discoveries or a new autoptic analysis could change them.

5.4.3.4. A fortified *limes*?

Combining the data provided in chapter 3 and in this chapter, it is clear that the forts and the road(s) have been built around the same time, i.e. end of the 3rd century A.D., during the reign of Diocletian. However, the area itself was already exploited for millennia for pastoral purposes and the route also, since many sites equipped with wells could guarantee the essential water supplies for both people and animals travelling along it.¹¹⁹⁹ However, without systematic archaeological excavations, the fact that the *Strata Diocletiana* was only a "monumental" stage of development, can, unfortunately, only be glimpsed. In fact, several sites have provided 2nd century A.D. pottery samples but this cannot be conceived as proof of permanent settlement. Both at Khan al-Qattar

¹¹⁹⁵ 15 miles north of Palmyra, 4.6 km from Arak/Erek there is the famous milestones of A.D. 75 attesting the roadwork of Trajan's father (Mouterde 1930-1931, 232-233, nr. 27 = *AE* 1933, 205 = Bauzou 1989a, nr. 110).

¹¹⁹⁶ Cfr. chap. 4.2 (for Sebkhath al-Mouh) and 5.5. (for camel's difficult adaptation on marshy terrains).

¹¹⁹⁷ Mouterde, Poidebard 1931, 102 n.2 for the two alternative routes. Cfr. also Hammad 2010, 140-141 and Lenoir 2011, 360.

¹¹⁹⁸ Bauzou 1989a, 350-351, Pl. 75-76. Cfr. Chapter 3 al-Bakhra's site sheet.

¹¹⁹⁹ Cfr. Morandi, Iamoni 2012 and 4.4.2 (for pastoral and hunting exploitation of the area since remote times) and chap. 4.3.2 (for water supply at forts' sites).

and Khan al-Manquora, some hydraulic installations could precede the fort's construction.¹²⁰⁰ Also, it has to be noted that all forts, even the smallest ones, like Khan Abou Shamat, are equipped with wells outside the ramparts.¹²⁰¹ Of course this can be interpreted as pre-existing the fort or simply as an easier and more secure way to guarantee visitors and pastoralists access to water. At al-Basiri, even if it is not necessary to imply the present of a permanent *cohors* in the 2nd century A.D., the fact that a son's soldier could have been buried there,¹²⁰² allows the suggestion that some sort of military installation or a resting point along the route existed at that time which accommodated soldiers during their movements.

In any case, whether the road and forts were established, for the first time or not, by Diocletian at this stage they have been conceived as a complex and integrated system. An excerpt from Malalas (end of 5th-6th century A.D.) apparently informs us that the *Strata Diocletiana* was only a part of a wider and similar (re-)arrangement of the eastern frontiers from the Euphrates down to Arabia:

«The same Diocletian also established along the borders from Egypt to the boundaries of Persia (a series of) camps. He stationed *limitanei* in them, and appointed *duces* for the provinces to be stationed to the rear of these camps with a strong force to keep watch. They also erected *stelae* to the Emperor and to the Caesar on the *limes* of Syria».¹²⁰³

The whole statement is quite vague. The term *stelae* have been taken as plausibly reference to milestones but there is no firm evidence that the *duces* had territorial competences until Constantine.¹²⁰⁴

What then was the aim of this huge and complex system, which apparently the *Strata Diocletiana* belongs to? The answer is far from being easy because it is part of a long-standing and still vivid debate among frontier studies where scholarly positions are sometimes completely opposite. The main issues have been regarding the concept of the frontiers themselves and the Roman strategy applied to them and how it changed overtime. It is impossible to offer here an exhaustive analysis of the debate. A recent and up-to-date analysis over the scholarship, as well as with possible new approaches, has been offered by Kagan.¹²⁰⁵

¹²⁰⁰ At Khan al-Qattar the first stage of the dam, while at Khan al-Manquora the cover cistern close to the upstream dam. Cfr. Chapter 4.3.2.

¹²⁰¹ Idem.

¹²⁰² Seyrig 1933a, 166, Fig. 2 = *AE* 1933, 215 = *Inv.* VIII, 206 = As'ad, Deplace 2002, nr. 23. See also the site's sheet for a discussion.

¹²⁰³ Malalas, p. 308,17–22. Translation by Dodgeon, Lieu 1991, 121.

¹²⁰⁴ Isaac 1990, 162-163; Lewin 2004, 227-229.

¹²⁰⁵ Kagan 2006. See also her rich bibliography.

For what, here, concerns the topic of Near Eastern Late Antique frontiers, despite all the open questions and thanks to all the archaeological and historical studies carried out in the last decades, some certain and firm points can be argued:

- First the word *limes* cannot be considered, any more, as designating a fixed military linear frontier. Isaac has clearly demonstrated that, apart for few literary texts connected specifically with the German campaigns, using the term to indicate the construction of military roads, between the end of the 1st and the 3rd century A.D., *limes* is rarely employed to indicate a frontier territory. Only since the 4th century has the word became commonly used to define a frontier district under the command of a *dux*. But it is simply an administrative term.¹²⁰⁶
- Despite that, some inputs and works could have been started or planned even earlier by Aurelian, it is undeniable that a renovation of the whole Near Eastern frontier system through the introduction of new military units, construction of new fortifications, and systematic repair of the regional road system, was conceived and accomplished by Diocletian (A.D. 284-305). His successors added or re-established some new forts along the frontier and some roads.¹²⁰⁷ In any case, the new arrangement had profound but diversified consequences in the region;¹²⁰⁸
- The entire Near Eastern frontier, stretching from the Euphrates to the Red Sea, cannot be seen as one and the same system. Its sections display different features and typology of development, caused by several factors. What they have in common is that they were reorganized and in some cases organized for the first time by Diocletian;¹²⁰⁹
- Moreover, the frontier area itself can no longer be seen as a “defence in depth” system organized according to a “Grand Strategy” to impede invasions and channel them along specific lightly defended routes.¹²¹⁰ This idea, in any case, would appear impossible for the *Strata Diocletiana*’s forts: «it is difficult to see how this very small forts [...] could have prevented marauders or invaders in any strategical or tactical way of crossing frontiers».¹²¹¹ Therefore frontiers were not intended as inclusive or exclusive barriers. They were instead areas of cultural,

¹²⁰⁶ Isaac 1988, 146; 1990, 161, 208, 408-410; 1993.

¹²⁰⁷ Lewin 2002 and 2004 (for the reorganization, and its impact, of the military apparatus by Diocletian and his successors); Konrad 1996, 2008.

¹²⁰⁸ Parker 2006, 552-553 (for the Kerak Plateau); Greatrex 2007 (general historical review on the 5th and 6th century); Lewin 2011 (for a brief survey of the frontier from Euphrate to Arabia).

¹²⁰⁹ *Limes Arabicus* Project 1987, 2006; Konrad 1996, 2008; Lewin 2011 (for a general analysis of the different sections).

¹²¹⁰ The “classical” idea of a fortified line system was strongly argued by Luttwak (1976) on the basis of Poidebard (1934, Mouterde, Poidebard 1945) and Van Berchem (1952) works. For the concept of *limes* in Poidebard see also Bauzou 2000a and Gatier 2000. Despite that, most of Luttwak’s arguments have been demolished. His idea of a grand strategy is only still supported by Wheeler 1993.

¹²¹¹ Graf 1997, 124.

economical and political interaction where different social groups were connected to each other.¹²¹² To go back to the first question, specifically what was the purpose of this integrated system of forts and road network to which the road(s) running from Palmyra to Khan Abou Shamat belong to? Preliminary to any discussion, it is important to observe that the Persians were never active along this section of the frontier nor in southern Syria, Jordan and Arabia. Scholars, therefore have suggested different explanations. The fundamental question is: did the nomads (i.e. later called *Saraceni*) ever represent a real threat for Rome and if so, was the system of forts and road(s) created in order to face this challenge? Two, opposite, answers have been proposed creating a quite animated debate.¹²¹³

The major proponent of the theory that the Romans deployed military posts and garrisons as a strategy aimed at controlling a persistent, if low-intensity, external threat from nomadic Arab tribes is Parker.¹²¹⁴ Facing with a severe lack of evidence for this theory until the 3rd century A.D. he admits that there is «little evidence for hostilities between Rome and the Arab tribes in the 2nd century» thanks to the presence of a strong central power.¹²¹⁵ According to him comparisons with other historical periods, from the Amorites to the Ottomans, suggest that «conflict between pastoralists and the peasants and other sedentaries was generally endemic along the frontier. The level of conflict clearly varied from period to period, as determined by disparate environmental, economic, political, technological, and other factors».¹²¹⁶ As already underlined before, analogy with modern Bedouins can sometimes provide some insight but cannot be used as proof.¹²¹⁷ Therefore, after a period of relative peaceful relationships, things changed from late 3rd century leading to the creation of a military frontier designed against a perceived hazard from nomads of the desert. According to Parker literary and epigraphic evidences supported his idea. The first literary reference (and the most important one according to him) to *Saraceni* appears in a panegyric of A.D. 291, in which the orator praises Maximian for his recent “imprisonment of the Sar(r)aceni”- and unlikely achievement for Diocletian.¹²¹⁸ A few paragraphs below the orator also

¹²¹² See mainly Isaac 1990, 1993; Teixidor 1993; Troussset 1993a, 1993b; Whittaker 1993, 1994, 2004; Elton 1996; Graham 2006. Cfr. also Milani 1987; Zanini 1997. With this idea agrees also Parker (1987, 48-49).

¹²¹³ The main focus of the debate has not actually been the area of the *strata* itself but instead Southern Syria and Jordan because more data were provided by recent archaeological projects as the *Limes Arabicus*.

¹²¹⁴ Parker 1987, 1997, 2006; followed by Kenney. Riley 1990 (who admits also the possibility of a double function) and Millar 1993, 186.

¹²¹⁵ Parker 1987, 43.

¹²¹⁶ Parker 1987, 49.

¹²¹⁷ *Nomad, Tribes and State in ancient NE* 2009. Cfr. chap. 4.2.

¹²¹⁸ *Pan. Lat.* III/11.5, 4-5 (at Trier): «I pass in silence over the Rhaetian border that was advanced by the sudden defeat of the enemy, I omit to mention the devastation of Sarmatia and the Saracens beset by the bonds of imprisonment, I pass by also those achievements won by the dread of your weapons as though they were feats of arms, the Franks and their king coming to seek peace and the Parthian (sic) flattering you with the wonder of his gifts. I set before myself a new condition of rhetoric that, when I seem to be silent upon all which is most important, I shall

congratulates Diocletian for his victory over the *nationes* on the borders of Syria (*de victis accolentibus Syriam nationibus*).¹²¹⁹ Although the Saraceni are not mentioned, and the victory was never formally recognized in the titulature of Diocletian, Parker assumed that the orator is referring to the same event, i.e. a Saracen campaign launched by Diocletian «somewhere in Syria in spring A.D. 290».¹²²⁰ According to him: «this schedule would have allowed the Romans to exploit the local grain harvest while the traditional desert pastures of the nomads were probably beginning to fail at the end of the winter rains. Although Diocletian was personally present for only few weeks, the mere presence of the senior emperor is significant. The actual campaign, of course, may well have extended beyond the time of the emperor's personal presence».¹²²¹ Following this idea Bauzou suggested that the *Strata Diocletiana* was built in preparation for this campaign.¹²²² Unfortunately, neither reference provides a clue to the location of these Saraceni or the circumstances that led to their suppression. As confirmation that this was not an isolated event, but the first in a continuing series of Roman responses to a rising “nomadic threat”, Parker cited the already mentioned inscription from al-Azraq where six units are listed constructing a road (*praetensio colligata*) between Bosra and Dumatha (al-Jawf).¹²²³ Since the inscription has now been pre-dated to the Aurelian period, and proved that word *praetensio* should be interpreted as “the fact of being in the first fighting line”,¹²²⁴ it can no longer be retained as any kind of supporting evidence.

In conclusions, as rightly pointed out by Eadie, in the absence of firm evidence that conditions in the desert or among Saracens had fundamentally changed during the closing decades of the 3rd century, which the Panegyric does not attest, a war against the *Saraceni* must be considered pure speculation.¹²²⁵

Due to the incongruities encountered in Parker's thesis, an alternative view which suggests nomads never represented a real threat for the frontier has been asserted.¹²²⁶ Of course conflicts could raise and the military units, located there, could intervene if necessary, but relations with the nomads were mostly peaceful. Therefore forts have not been built in order to exclude or fight

yet reveal that there are other greater glories present in my praises of you». (translation by Dodgeon, Dodgeon, Lieu 1991, 107).

¹²¹⁹ *Pan. Lat.* 7.1.

¹²²⁰ Attested in *Antiochia* and *Emesa* in May by *CJ* 9.41.9.

¹²²¹ Attested by *CJ* 9.41.9. Parker 1987, 45. Cfr. also Parker 2006, 542: « In the spring of 290 Diocletian launched a war somewhere in Syria» and Dodgeon, Lieu 1991, 107, n.28.

¹²²² Bauzou 2000b, 88.

¹²²³ *AE* 1987, 964 = *AE* 1994, 1797 = *AE* 1996, 1623 = Bauzou 1996. Bauzou 2000b, 89.

¹²²⁴ *AE* 2001, 1976. Christol, Lenoir 2001.

¹²²⁵ Eadie 1996, 79.

¹²²⁶ Isaac 1990, 1993; Banning 1986, 1987; MacDonald 1993; Whittaker 1994; Eadie 1996; Graf 1997; Lenoir 2011, 361-363.

nomad population beyond the frontier but simply to control the local traffic along the roads and the important water points: «the road system is the *raison d'être* for the forts, not the reverse».¹²²⁷ The last assumption can be demonstrated by the fact that the main water supply was almost always outside the forts rather than inside.¹²²⁸ In summary it was a matter of police local work rather than military defence of the frontiers. In Roman world there was no clear distinction between the police force and military forces since soldiers could undertake both functions. Literary and epigraphic sources do not help us in this instance.¹²²⁹ To support the interpretation of military installations as police posts, patrolling movements along the road, it can be surmised that the forts were located at regular distances (apart Khan Aneybeh and Khan al-Manquora that were closer) representing intermediate station points along the road. The fact that forts could have been also used by civilians as *mansiones* is confirmed by the inscription from Khan al-Abyad (that between Jayrud and al-Qaryatayn).¹²³⁰ They were not only intermediate stops along a N-S road but were also located in strategic geographical points, guarding passes that allowed to cross the mountain's chain. Therefore they were intended to connect the steppe with the interior rather than close it.¹²³¹ To sum up, I believed that the two positions have more common arguments than differences. Both positions agree that, in this frontier area, settled and nomadic population naturally co-existed because they were economically mutually interdependent.¹²³² Then, it is a matter of perspective, and interpretation of the literary sources, as to what could have been considered the main role of the forts. Some scholars believe that they were created for controlling the nomads beyond the frontiers while others that they were infrastructures connected with the road system in order to carry out everyday local police duties. The nomads may have been perceived as a problem but not reason enough for the forts' construction.

Whatever the roman perception of frontiers may have been, it is undeniable that the *Strata Diocletiana* and its forts were situated in a transitional region between agricultural and urban population to the west and the nomadic tribes of the desert to the east. However, as seen in chapter 4, the nomadic concept itself includes many, intermediate, economic and social lifestyle strategies. Movements across this intermediate area, both of settled and nomadic population, have always been a matter of fact, in the region, and they were dictated and regulated by the natural environment. The scarce natural resources available have always dictated and regulated economic,

¹²²⁷ Isaac 1992, 128.

¹²²⁸ Cfr. chap. 4.3.2.

¹²²⁹ Gregory 1995-1997: 1995, 245-247.

¹²³⁰ *CIL*, III, 6660 = *CIL*, III, 14161 = *IGLS* V, 2704 = *AE* 2006, 4 = Dodgeon, Lieu 1991, 121-122 (for english translation).

¹²³¹ Poidebard 1934, 44-49 (referring to the passes controlled by forts); Bauzou 1989a 370; Lenoir 2011, 359-360.

¹²³² Cfr. chap. 4.4.2.

political and social patterns of interaction between groups and inside themselves. Therefore, the relationships between sedentary populations and nomadic groups have always been interconnected and episodes of conflict could arise, easily, between the two groups but also within each one. In any case, these relationships have never been static but changed over time.

I suggest that until further evidences will prove or not that nomads, by the end of the 3rd century, were such a serious threat, it is incorrect to assume that Diocletian (re-)organized an integrated system of roads and military installations in the Southwest Palmyrena in order to ensure a “new trend” in control of the steppe, aiming at strengthening this frontier area after many years of political, economical and social troubles followed the fall of Palmyra in A.D. 272.¹²³³ There was not general change in strategy or the need to face a particular threat.¹²³⁴ The reorganization undertaken by Diocletian was conceived as poli-functional.¹²³⁵ In fact, it could achieve many goals. Forts, thanks to their strategic position, could monitor movements, whether of sedentarists or nomads, for internal security but also, probably, for taxation purposes. They also controlled the few natural resources available. If required, small offensive or defensive operations could have been carried out in case of conflicts among or between different groups. Moreover, new or restored road connections allowed both troops and travelers (and goods) to move faster and more safely, while forts providing the possibility of regular resting places to both categories. At the same time, roads and forts could have provided, for the central power, a way of demonstrating its control over the territory both to the local population and nomadic groups.

It is difficult to establish how long this system of road and forts lasted, for the section under study. Milestones attest repairs until Constantine the Great (A.D. 324-326) but then the situation becomes very blurry without the support of archaeology.¹²³⁶

The fact that the forts of the *Strata Diocletiana* are mentioned in the *Notitia Dignitatum* seems to prove that they were still occupied by Roman soldiers around the year A.D. 400. However, in an already mentioned (Chapter 4.4.2.) passage, Procopius described how a short time before the

¹²³³ Indeed, after ending in A.D. 272, the “revolt” of Odainat and Zenobia/Vallabathus that at the beginning let to expel the Sasanian threat from the frontier but then coincided with the fall of the commercial role of Palmyra Aurelian, began to rebuilt the security system of the eastern frontier but his assassination in A.D. 275, brought back the polication instability of the empire until the arrival in the throne of Diocletian in A.D. 284. For a detailed analysis of the event related to Odainat and then to Zenobia and Vallabathus rise and fall I refer to Gnoli 2000, Hartmann 2001, Sommer 2005a and Teixidor 2005. Cfr. also Kowalski 1997, for Late Roman palmyra in the epigraphical and literary sources.

¹²³⁴ The already mentoned Malalas text should be intended as a reflex of this policy of general reforms and renewal by Diocletian (Eadie 1996, 79; Lenoir 2011, 361-363).

¹²³⁵ A non-unilateral idea of the system can be found also in Kennedy, Riley 1990, 21; Gregory 1995-1997: 1995, 79-90, 189-190; Cameron 2012, 55-56; Rocco 2012, 257; Wheatly 2013, 895.

¹²³⁶ For milestones dating see Appendix.

outbreak of the war between Rome and Persia in 540, the chiefs of the Arab allies of the two superpowers, quarrelled over some rights to a desolate land:

«Now this country, which at that time was claimed by both tribes of Saracens, is called Strata, and extends to the south of the city of Palmyra; nowhere does it produce a single tree or any of the useful growth of corn-lands, for it is burned exceedingly dry by the sun, but from of old it has been devoted to the pasturage of some few flocks. Now Arethas maintained that the place belonged to the Romans, proving his assertion by the name which has long been applied to it by all (for *strata* signifies ‘a paved road’ in the Latin tongue), and he also adduced testimonies of men of the oldest times. Alamoundras, the ally of the Persian, however, was by no means inclined to quarrel concerning the name, but he claimed that tribute had been given him from old for the pasturage there by the owners of the flocks».¹²³⁷

It is quite certain that we can connect the term *strata* mentioned here with the region crossed by the ancient *Strata Diocletiana*.¹²³⁸

Later, a minister of Justinian advised the emperor not to offer the Persian a pretext for war for the sake of a small bit of land which was absolutely no account, but altogether unproductive and unsuitable for crops.¹²³⁹

Isaac has observed: «the very fact that such a dispute could take place is an indication that there were no army presence there».¹²⁴⁰ He argued also that the same was true for the section of the frontier between Palmyra and Sura. Nevertheless recent excavations have proved a continuity of the military presence in the sites along that section of the frontier.¹²⁴¹ It is worth noting that Procopius specifies that the quarrel was over the area south of Palmyra. However, without further archaeological researches it is not possible to establish if there has been here too a continuous occupation, in this area until Omayyad period.¹²⁴²

5.4.4. Some considerations

It is significant that the model for the *TP*, apparently dating between the 4th and 5th century A.D., does not represent the road south of the Jebel Rawaq, or apparently the southern stretch of the

¹²³⁷ Procop, *De bellis* 2.1.1-8 (c. A.D. 535). Translation from Dodgeon, Lieu 1991, 120.

¹²³⁸ Bauzou 1993, 36.

¹²³⁹ Procop. *De bellis* 2.1.9-11. Translation from Greatrex, Lieu 2002, 102-103.

¹²⁴⁰ Isaac 1990, 211.

¹²⁴¹ Konrad 2008 and Lewin 2011, 235-243.

¹²⁴² Pottery samples collected during surveys can be dated to the 5th -7th century A.D. but this demonstrates only sporadically frequentations of a site not its permanent occupation.

Strata Diocletiana, whose forts are attested instead in another almost contemporary source: the *Notitia Dignitatum Orientis*. It attests, nevertheless, the stations between Palmyra and Sura on the Euphrates (*Harac, Oruba, Choll, Risapa*) that are considered the northern sector of road.¹²⁴³ Consequently, the absence of the section of the *Strata* from Palmyra to Damascus, has been used as evidence to support an earlier date of the representation of the Near East in the *TP*, as asserted by Bowersock:

«Needless to say, the *Strata Diocletiana*, which we know to have gone southeast of Damascus to al-Azraq by way of Sa'ne, is totally absent in the Peutinger Table. This absence would have to be explained away by any proponents of a fourth-century date for the Peutinger archetype. The information on the map relative to the Near East would have presented a situation between 120 and 160 AD. Is there any correlation between the great number of milestones of 161-166 AD and the establishment of a road network map? We are not able to answer precisely to this question but we can only say that the Peutinger map represents the main roads of Syria at the beginning of Marcus Aurelius's reign».¹²⁴⁴

The road north of the Jebel Rawaq is perhaps more ancient. In fact, the analysis of the *Strata Diocletiana*'s milestones state that this road was arranged only during the late 3rd century A.D. as part of a complex road-forts system. However, this could represent only a development of a more ancient route.¹²⁴⁵ The two routes in any case were strictly interconnected thanks to mountains passes and transversal route through them.

Therefore, without other supporting evidence like milestones, it is erroneous to consider the data provided by the *TP* as a representation of the exact road system network of the Near East in the 2nd century A.D. In fact, this important document is a composite work, the result of subsequent processing and updates. Possible explanations for the lacking of part of *Strata Diocletiana* in the *TP* could be connected instead, with the ideology, purpose and date behind the original or the copies of this important document.

As already pointed out above, we have to consider the Palmyrene road network as a complex system that has developed and changed overtime.

¹²⁴³ Segm. XI.

¹²⁴⁴ Bowersock 1983, 178-179. Same opinion in Bauzou 1989b, 208 and Millar 1993, 135-136. Lewin 2002, 95: «It is significant that the *Tabula Peutingeriana*, apparently the expression of a period between 120 and 160 in the Near East does not depict the existence of a road south of the Jebel Rawaq. It attests nevertheless the stations between Palmyra and Sura»

¹²⁴⁵ Gregoratti 2006, 262, 266-267; Lenoir 2011, 362 n. 25; Lewin 2011, 243; Rocco 2012, 256.

5.5. Means of transport: camels, donkeys and wagons

To conclude this chapter, on mobility, few words need to be said over the actual means of transport available at that time.

Difficult landscapes, such as arid ones, definitely influenced the choice of certain means of transport. In such harsh context, effective lines are very important, determined also by the purpose of the journey. Usually a distinction is made between means of transport used for long distance trade (camels) and those for local mobility (donkeys and mules),¹²⁴⁶ but this does not mean that long distance ones could not have been used for local mobility and vice versa, as it appears to be the case. Indeed, the Palmyrene Tax Law mentions local taxes on goods that were imported either on camel or by donkey, and this strongly implies that both were commonly used for local transport that was to or from the direct hinterland.¹²⁴⁷ Actually, not only camels and donkeys are listed in the Tax Law, their proportion with wagon-loads is already cleared at the beginning in the decree of the council (P.14; G. 12-15): «For one wagon-load of any kind of merchandise, the tax has to be assessed at the rate of four camel-loads». I will return to this below.

Camel

Three different breeds of camels were present in the region: one-humped dromedaries (the most common), two-humped Bactrian camels, and hybrid camels, that is, the products of crossbreeding. These hybrids are usually larger and stronger than the parents species.¹²⁴⁸

The full integration of the camel into desert societies, and indeed into the general economy of the ancient Near East, is a relatively late phenomenon. In the Levant, the earliest reliable evidence for the mere presence of domestic camels dates to the late second millennium B.C., more than five millennia after the introduction of goats and sheep, and at least two millennia after donkeys.¹²⁴⁹

One of the key reasons for the debate over the introduction of the camel is the implication of its use for the potential quantity of long-distance trade before Islamic period. Gawlikowski, for example, believes that part of the reason that the commerce of Palmyra was not flourishing in the second millennium B.C. rests on the fact that camels were not, at that time, fully established in the

¹²⁴⁶ Wagons can be considered as belonging to both of them.

¹²⁴⁷ Matthews 1984; Teixidor 1984, 57-90. For the list of taxes see chap. 4, Table 2.

¹²⁴⁸ Bulliet 1975, 142-146, 167-172.

¹²⁴⁹ About the introduction and history of camel before classical time I refer mainly to Rosen, Seidel 2010; http://www.silk-road.com/newsletter/vol3num1/7_bactrian.php (consulted 1.10.2013); Adams 2007, 50-56; Bulliet 1975, 27-110.

region.¹²⁵⁰ Indeed, it seems that the camel does not play an important role as a transport animal until 1400 B.C. in the Levant. Its role apparently was really increased from 500 B.C. with the invention of the North Arabian saddle, between 500 B.C. and 100 B.C.¹²⁵¹

Bulliet documents differences in riding saddles, distinguishing most significantly between the South Arabian saddle, where the rider is seated behind the hump, and the North Arabian saddle, where he is seated on top of the hump.¹²⁵² The North Arabian (cushion) saddle provides superior control over the animal, and Bulliet ascribes at least part of the evolution of camel pastoralist military potential to the introduction of this saddle type. The cushion saddle however, was used for both riding and carrying cargo. It is harnessed to the camel by straps or ropes underneath the belly and tail of the mount. In contrast, when the cushion saddle is used for riding, there is an additional strap or harness attached to the front of the saddle that wraps around the chest of the camel, presumably providing a more secure and stable mount.¹²⁵³ Based on the variation in harnessing, it is possible that the cushion saddle and associated harnessing, for the transport of cargo, was ill suited to support heavy and/or bulky loads. In contrast, recent Bedouin use a more stable packsaddle, *mesâme*, which is a modified version of the North Arabian saddle. The difference between these two types of saddles is that the “cones” on the packsaddle are “lower and flattened” compared to those on the riding saddle. This type of packsaddle provided a stable platform for loading items as large as a black tent onto a camel.¹²⁵⁴

The main reason why camels were able to dominate desert transport was their unique physiology. Ancient writers were certainly aware of the camel’s suitability for desert travel, even if they could not fully understand its physiology.¹²⁵⁵ Pliny noted that there are two types of camel, Dromedary and Bactrian, and that both served as beasts of burden, although they were sometimes used as war mounts.¹²⁵⁶ He notes a number of other details, mainly concerned with reproduction, but more importantly that camels do not travel beyond their customary march, nor do they carry loads that are too heavy. They can endure thirst for up to 4 days, but only drink muddy water—clean water being distasteful to them. Finally, they were often smeared in fish oil by their drivers to ward off gadflies, to which camels are particularly susceptible given their sparse body hair.

Aelian, in his treatise on animals, notes (probably following Pliny) that the camel does not like clear water and that it can endure up to 8 days without drinking. The animals’ longevity was also

¹²⁵⁰ Gawlikowski 1988, 163.

¹²⁵¹ Bulliet 1975, 87.

¹²⁵² Bulliet 1975.

¹²⁵³ Bulliet 1975, 82-85, Figg. 33-35.

¹²⁵⁴ Rosen, Saidel 2010, 73.

¹²⁵⁵ Diod. Sic. 2.54.6 notes that dromedary camels can travel great distances in waterless and desert areas. Bactrian camels, he notes, could carry as much as 10 medimnoi of wheat (some 900 lbs weight).

¹²⁵⁶ Plin. *NH* 8. 67.

worthy of note, and Aelian records that camels live for 50 years, and those from Bactria can live twice as long.¹²⁵⁷ Finally, Vegetius, in his *Epitoma Rei Militaris*, states that the camel is «a type of animal well adapted to sands and enduring thirsts, and is said to keep straight on roads without error even when they are obscured by dust in the wind. However, apart from its novelty when it is seen by those not used to it, it is useless in battle».¹²⁵⁸

Their ability to over consume and store energy as fat in their humps is well established, but their capacity to function without water has been explained only recently. The camel does not store water, but rather conserves it through a minimum loss of water in body waste. It is also able to endure a body temperature variation of 7-9 C° in accordance with the rise and fall of air temperature. Normal mammals usually maintain a body temperature within a range of 1 C°, and are required to expend large amounts of water to achieve this. Efficient sweating, fat concentrated in the hump rather than around the body, and sparse body-hair, all help to decrease water loss in camels. But they can also endure a massive fluid loss of up to 30 % of their total body weight, which is fatal to other mammals. Additionally, they can rapidly replace this lost water by overcompensating and drinking far more than other mammals could tolerate, as they can control the speed of fluid absorption, and absorb water into their bloodstream. This enables them to restore renal function quickly and to return to a physiologically normal condition. Thus in summer months they can travel 20 km per day, enduring thirst for 3 to 5 days, while in winter, 25 km per day, with 5 to 7 days without re-watering. If vegetation is available, however, camels may be able to operate even longer without water.¹²⁵⁹

Camels also play a basic role in subsistence among some pastoralists. They may provide milk (up to 6.6 kg per day during lactation, which may last a full year) and derivatives and meat (600 kg live weight on average). Beyond subsistence, other products include camel hair/wool, used in textiles and consumed domestically and marketed; camel skins, in recent times used primarily for containers; and camel bones, used for tent pegs and other implements (especially in earlier times).¹²⁶⁰

As pack animals, camels have been used to transport trade goods, basic camp and subsistence equipment, and, of course, military equipment. Camels can be ridden 60–90 km per day over a

¹²⁵⁷ Ael. *NA* 17. 7 and 4. 55.

¹²⁵⁸ Veg. *Mil.* 3. 23. Vegetius is here referring to the incorrect theory that horses are frightened of camels and will not charge them.

¹²⁵⁹ Adams 2007, 54; Bornstein 1990; Khazanov 2009, 123; Toplyn 2006, 489-492.

¹²⁶⁰ Rosen, Saidel 2010, 73.

long period (depending on the camel, the rider, and the season) and have been ridden up to 160 km in 16 hours, requiring significant rest afterward.¹²⁶¹

Due to their elongated legs, which protect camels from heat from the ground, they are however, not particularly stable when laden, and therefore do not tolerate slippery or rocky grounds well; sand and dry, grassy paths, typical in desert environments, therefore constitute the optimum conditions for camel transport. But, to cross the salt plain (*sebkhat*) even in dry weather may be a problem for the camel as salt below the hard crust contains water making the surface slippery.¹²⁶²

A male dromedary can carry around 200 kg over long treks, and even more for short distances.¹²⁶³ Interestingly, dromedary-bactrian hybrids, also known in antiquity, can carry up to twice that of the purebreds.¹²⁶⁴ The ability to traverse deserts confers a distinct advantage over equids and oxen, with their greater watering requirements. The primary disadvantage to the use of camels lies in the inefficiency of packing and unpacking loads each day.

Most of the iconographical evidences suggest that camels were the transport animals *par excellence* for the Palmyrene long-distance caravan routes, especially to the Euphrates and Persian Gulf. Funerary reliefs of merchants portray them with camels, while other reliefs portray camels in processions, testifying to the importance of camels in the mercantile community.¹²⁶⁵ Moreover, Arsu, the god of caravans, is usually depicted either upon or standing next to a camel. As seen above, different breeds of camels are often found in the region but the iconography of Palmyra seems to represent mainly the dromedary, or one-humped camel.

However, the Palmyrene Tax Law mentions local taxes on goods that were imported either on camel or by donkey, and this strongly implies that both were commonly used, at least for local transport that was to or from the direct hinterland.¹²⁶⁶ They were also probably employed for military purposes because epigraphical and iconographical evidences attest the existence of a meharists corpus.¹²⁶⁷

¹²⁶¹ Rosen, Saidel 2010, 72.

¹²⁶² Meyer 2014 (forthcoming).

¹²⁶³ That assessment is supported by both a comparison of haulage capabilities for donkeys, mules and camels and by a review of transport charges (by pack) for those animals as listed in Diocletian's Edict on Prices. A donkey load was judged to be 300 Roman lbs (225 lb./100kg), a camel load was reckoned to be 600 lbs (450lb./200kg) and a mule load approximated that of a camel. Significantly, while a donkey load usually cost 4 *denarii* per mile, both camel and mules loads cost 8 *denarii* (Jones 1964, 841 and Parker 2006, 492).

¹²⁶⁴ Rosen, Seidel 2010, 73; http://www.silk-road.com/newsletter/vol3num1/7_bactrian.php (consulted 1.10.2013).

¹²⁶⁵ Bulliet 1975, 103 Fig. 45 (= McLaughlin 2010, 109 Fig. 2); Drijvers 1995, 119; Seyrig 1934, 159-165; Smith 2013, 74-75, Figg. 3.7-3.8; Will 1992, 94-102.

¹²⁶⁶ Cfr. also Matthews 1984; Teixidor 1984, 57-90.

¹²⁶⁷ Will 1992, 98-102. For camels employed by soldiers see also Toplyn 2006, 489-495.

Donkey

In the ancient world, much like today, the donkey was a figure of ridicule. It was a donkey that provided Apuleius with his metamorphic hero, and Aelian rather charmingly noted that «it alone of all the animals was not born in tune».¹²⁶⁸

Ancient writers recognized the suitability of the donkey for agricultural work of all kinds. Particularly important are Varro's comments about rearing donkeys, so that the strongest animals possible are bred, and Palladius' comment that donkeys play an important role in agricultural production because of their toleration of hard work and sturdy nature which meant that they required little maintenance.¹²⁶⁹

Donkey was also the most widely used form of transport in the ancient world, and thus played a vital role in the economy of the ancient world as a whole. The donkey is originally a semi-desert animal (Arabia and North Africa), but its use was widespread throughout Europe and Asia. This because when it comes to discuss the maintenance and feeding requirements of transport animals, it is clear that donkeys required much less attention than horses, making them cheaper to own and maintain, and horses also make poor pack animals.

Donkeys cope perfectly with rough and rocky terrain and narrow paths. Therefore, passing numerous *wadis*, typical of the Palmyrena region, would have not been a serious problem for them. They have excellent climbing powers too: the hoofs enable them to negotiate even difficult mountainsides and narrow tracks with heavy loads.¹²⁷⁰ They combine these features with the ability to work in desert climates for up to 60 hours without watering. Research has shown that they have a much higher thirst threshold than any other equid.¹²⁷¹

Their ability to carry heavy loads of up to 100 kg without noticeable affect,¹²⁷² and sometimes also to act as a mount, made them indispensable for farm and transport work.¹²⁷³

It appears that camel, being able to carry three times more, moving faster and needing less frequent feeding and watering than a donkey, was (and still is) the best suited pack and transport animal for long distances migration. The donkey, in the other hand, was a quicker and cheaper option for a short-distance transport.

However, the donkey was probably a much more common sight in ancient Palmyrene caravans too than our sources indicate. In fact, processions scenes from the temple of Bel and the sanctuary of

¹²⁶⁸ Apul. *Met.*; Ael., *NA* 10. 28.

¹²⁶⁹ Varro *Rust.* 2. 6. 1–5; Palladius 4. 14. 4.

¹²⁷⁰ Meyer 2014 (forthcoming).

¹²⁷¹ Adams 2007, 57-58.

¹²⁷² Almost a third of their own body weight. Cfr. above n. 1263.

¹²⁷³ Adams 2007, 58; Khazanov 2009, 123; Toplyn 2006, 492-493.

Allat in Palmyra, shows donkey as well as camels in the caravan.¹²⁷⁴ This appears to, still, be the case still in modern times: when Carsten Niebuhr travelled from Bagdad to Aleppo in 1766, donkeys are listed as pack animals together with camels, mules and horses.¹²⁷⁵

Mules and horses

Two other burden and transport animals not attested by the Tax Law but commonly used everywhere in the Roman Empire need to be considered too: mules and horses.

Horses are stronger and faster than donkeys, making them particularly suitable for riding or for drought, but they are poor pack animals, as they can carry little more than a donkey (c. 170 kg), but cost much more to maintain. Horses were, therefore, uneconomic as working animals, and were a “luxury” largely confined to the rich.¹²⁷⁶ Most probably they were used by the elite or high-ranking officials for their swiftness and also for military needs, such as by Palmyrene archers.¹²⁷⁷ Schlumberger, proposed that the villages or estates surveyed in the Northwest Palmyrena were centres of stock raising, mainly horse breeding («des ranches») to furnish the Palmyrene cavalry.¹²⁷⁸ This would be confirmed by many iconographic images, mainly funerary, in the area depicting horses mounted by cavalymen.¹²⁷⁹

Horse could also have been employed along with camels and donkeys in the caravans, as was still the case in the 19th century.¹²⁸⁰ However, due to their low adaptability in desert conditions, I would suggest it was more used for short tracks or they were changed more often in the *mansiones* along the routes.

Like camel crossbreeding, mules exhibit traits or physical capacities exceeding both parents: they possess great physical stamina and are more sure-footed than either horses or donkeys. Exploited to only a minimal extent in agricultural pursuits, mules were in great demand for commodity haulage and drawing vehicles throughout the Roman world, being able to carry around the same weight of camels.¹²⁸¹ Mules were the most esteemed transport animals in the Roman army. They appear in many representations, as for example the Trajan column. However, it seems that their use in Near East was not so common. This may be attributed to the well-established use of camels

¹²⁷⁴ Drijvers 1995, 119 and Seyrig 1934, 159-165.

¹²⁷⁵ Niebuhr 1778, 374. For Niebuhr’s travel in the Near East see also Seland 2012.

¹²⁷⁶ Adams 2007, 58-60.

¹²⁷⁷ Will 1992, 94-97. On horses employed for military purposes see also Toplyn 2006, 494-495.

¹²⁷⁸ Schlumberger 1951, 133, followed by Matthews 1984, 162 and Will 1992, 21, 97.

¹²⁷⁹ Schlumberger 1951, Table XXI-XXII, XXXVII.2, XXXIV.1 (horse and camel).

¹²⁸⁰ Niebuhr 1778, 374. For Niebuhr’s travel in the Near East see also Seland 2012. Cfr. Will 1992, 94.

¹²⁸¹ Cfr. above n. 1263.

and donkeys and more important due to the difficulties and cost of breeding mules, not easy in favourable circumstances and even more difficult when horses were rare and expensive.¹²⁸²

The maintenance of animals was a costly undertaking. Intensive husbandry practise, in which humans procure or produce the forage resource that animals consume, was surely even more expensive. Calculations of feeding requirements and cost for donkeys and camels, carried out by Adams based on papyri evidences from Egypt, are very high: a donkey costs annually around 288 drachmas while a camel 540 drachmas.¹²⁸³ Horses and mules were provided with similar quantities of hay than camels. However, given the horse's lower capacity for abstinence from food and water, they were certainly more expensive to keep than donkeys and camels. The other, cheaper, option for the latter was pasturage which, as it has been discussed, was the main form of economy practised in the Southwest Palmyrena. In fact, camels, which are primarily bush feeders, could easily be let loose to browse, as they are in modern time. Also their impact on the vegetation is slight.¹²⁸⁴ However, camel herds, cannot pastured together with small stock because they have different patterns of movements and their requirements are different from those of sheep and goats: a healthy camel's diet needs desert plant rich in salt.¹²⁸⁵ Camel breeding was probably a specialized practise. It can be hypothesize that a suitable breeding or at least grazing site was the area around the Sebkhat al-Mouh.

Pack animals used by late antiquity military forces have been study by Toplyn within his study on zooarchaeological remains among forts of the Kerak Plateau (*Limes Arabicus Project*).¹²⁸⁶ The most common one, discovered in all sites and for all periods (3rd, 4th and 5th century A.D.), was donkey which was also possibly employed as plough animal in agriculture. These donkeys may have been bred by the soldiers themselves or requisitioned from the civilian population.

Minimal skeleton representation from project sites supports the theory that mules played only a minor role (due to their non cost-effective breeding and importation) in the local economy, whether for transport or agricultural purposes, especially in light of the, local, existence of alternatively and easily accessible supplies of alternative pack animals (donkeys and camels). Skeletal evidence for horse is more scant than those of mules. This seems to not reflect their relative importance to the Roman army on the frontier (since many were used in cavalry unit) but because the carcasses of horses could have been disposed of outside these forts. As noted above, it

¹²⁸² Adams 2007, 60-62 and Toplyn 2006, 493-494 (at military sites).

¹²⁸³ Adams 2007, 83-89.

¹²⁸⁴ Adams 2007, 88.

¹²⁸⁵ Betts, Russel 2000, 30-32.

¹²⁸⁶ Toplyn 2006, especially pp. 489-495 for pack animals. See also Chapt. 4.4.2.

must be remembered that horse breeding in such arid regions was not easy and very cost-ineffective compared to other local pack animals, like camels.

Indeed, the archeofaunal evidence demonstrates the presence of camels (one-humped dromedaries, two-humped Bactrian camels, and hybrid camels) in all sites and for all period. Since no evidence was found for the routine consumption of camel flesh by frontier troops, it is more likely that camel were kept mainly as mounts and pack animals and only occasionally eaten when their working days were ended, although their milk may have been consumed regularly. The source of camels for the Roman Army, in Arabia, may have been diverse; including local breeding, requisition or perhaps levied as taxation in kind from the nomadic population.

Wagons

The use of wagons for the transport of bulky or heavy objects has been the subject of some debate amongst scholars. While, wheeled vehicles are attested in the Near East in iconographic images already from the 4th millennium B.C., the common opinion is they were seldom used as mean of transport in Roman time.¹²⁸⁷ More recently, Richard Bulliet has argued that the camel replaced the wagon as a mode of transport in most of the Near East and North Africa during the Roman period, and at least by the time of the Arab conquest.¹²⁸⁸ Roger Bagnall, in response to Bulliet, and after comprehensive consideration of papyri, argued that the wagon did not disappear (at least) from Egypt, certainly not until after the 7th century A.D.¹²⁸⁹ It is far from clear, however, that the wagon ever disappeared.¹²⁹⁰ In any case, Bulliet himself admits, that pack animals were always more common and widely used in the Near East than wagons. This was most likely due to their high cost of construction but it may also be related to topographical features. There is no evidence for how much a wagon may have cost, but can be fairly certain that even the most rudimentary wagons lay beyond the reach of ordinary farmers/people. Indeed, it is likely that wagons, as often was the case with pack animals, were hired or borrowed as required, rather than owned.¹²⁹¹ Wagons could easily be used upon paved roads and on the major desert routes. Flat and easy terrain was the main requirement.¹²⁹² Other terrains, as rocky or marshy ones, and minor tracks created stability problems especially if wagons were heavily loaded. These two considerations are apparently valid for the area under study too. But, as reported above, the Tax Law clearly fixed

¹²⁸⁷ For wheeled vehicles during Bronze Age period see Raccidi 2012.

¹²⁸⁸ Bulliet 1975, 9-27.

¹²⁸⁹ Bagnall 1985.

¹²⁹⁰ For Bulliet the argument rests on the tenuous argument *ex silentio*, that, as wagons are nowhere mentioned in the Geniza papyri from the Arab period, they had fallen out of use (Adams 2007, 65 n. 73).

¹²⁹¹ Adams 2007, 66.

¹²⁹² Implied by Strabo 17. 1. 50.

from the beginning the ratio for taxes on goods carried by wagons (1 wagon = 4 camel loads).¹²⁹³ I believe that if wagons were not (at least) a quite common alternative mean of transport, the equation would not have been necessary. Bulliet suggests, in this reference, a local Palmyrene attempt to discourage wheeled transport: according to him made competitive by Trajan's road construction in Syria, levying an exorbitant tax upon anyone who carried good by charts.¹²⁹⁴ Since he presupposed that an outsider set carting business, the law would have promoted in this was local camel transport business.¹²⁹⁵

The Coptos Tax Law inscription (A.D. 90) confirms that in Egypt, also, civilian transporters must have used wagons to move. In fact, the text records the charge made for the use of roads between Coptos and the Red Sea coast. A charge of 4 drachmas, 12 times than for a donkey, was made for a pass (*πικτάιον*) along the desert routes.¹²⁹⁶

Despite the debate about the decline in use of wagons since the 6th century A.D., it is clear to me that wagons were an important mean of transport in Palmyra during the Roman period. But, because of their high cost of construction, they never undermined the role of pack animals such as camels and donkeys, both for local and long distant movement.

To conclude, on the basis of epigraphical and iconographical evidences, the means of transport used in the Southwest Palmyrena were most likely those commonly used in the Near East area: camels, donkeys, mules, horses and wagons. Since roads could have been utilized for many reasons, trade (both local and long-term), military and personal purposes, also the lines used could have been different, depending on many factors (length of the journey, motivations, economical availability of the travelers etc.). Probably camels were employed mainly for long distance trade though donkeys and wagons were probably more frequently used for local transport. Mules and horses, due to their maintenance cost, were confined to high-class level and/or in military contexts.

¹²⁹³ P.14; G. 12-15.

¹²⁹⁴ He compared this ration to that of 1 to 2 of the later (A.D. 301) Diocletian's edict of prices on the basis of similar loads.

¹²⁹⁵ Bulliet 1975, 19-21.

¹²⁹⁶ *OGIS* 647 = *IGGR* I.1183 = *SB* 5.8904. On the Coptos Tax Law see also Burhkalter 2002.

Conclusions

In the first century A.D. Pliny the Elder described Palmyra (*HN* 5.21.88) as a city plentiful of waters and fields thanks to the richness of the soil, but encircled on all sides by desert and, for this reason, naturally separated from other lands. Through this description Pliny provides a notional perception of what an oasis, namely Palmyra, ought to be like. This has also been the perception of early, but also contemporary, travelers and the first impression of someone “discovering” the site on Google Earth. In fact, the city strikes for its well preserved monumental buildings and archaeological remains that testify the prosperity of the city during the Roman period. This wealth was undeniably also the result of the Palmyrene entrepreneurs’ vocation. Indeed, following Appian’s words (*B Civ.* 5.9), «being merchants, they carry Indian and Arabian goods from the Persians and they dispose them in the territory of the Romans». When Appian wrote this statement, despite referring it to events of 41 B.C., he was most probably describing a contemporary situation, i.e. middle of 2nd century A.D. His time is actually considered the most prosperous period for the Palmyrene long-distant trade with the Far East via Persian Gulf, as testified by the rich epigraphic *corpus* but, also, the period when Palmyrene community was finally integrated in the Empire. If these assumptions appear to be correct in a broad sense, the reality had many aspects and the process was definitely not so constant, smooth, unambiguous and concluded. Studying Palmyrene history in Roman time is not only a matter of studying the history of the oasis between the 1st A.D., when there are the first attestations of a Roman influence over the city, and A.D. 272, when the emperor Aurelian defeated Zenobia and Vallabathus and the city lost its long-distance trade role (and prosperity) to become the seat of a legionary fortress. It is also a matter of studying the history of the settlement and its community in a long *durée* perspective (1st B.C. – 7th A.D), the important relationship between the city itself and its large hinterland and how this was constructed, maintained and developed over time. This approach will surely lead to a deeper comprehension of the economical, political and cultural dynamics of the history of Palmyra in Roman period, both in a local context of city-hinterland relationship and in a supra-regional socio-political, economic and cultural system.

Since Palmyrene control during Roman time extended over an extremely large territory, from the border with *Emesa* and possibly *Apamea*, on the West, to the Euphrates, on the East, the research focused over a limited, but still large, area of the Palmyrene hinterland: the southwest region. This area represents a perfect sample to test the dynamics questioned above within a broader perspective as well as in a more extended diachronic framework. Two main questions have been asked: was the Southwest Palmyrena economically important for the city and, if yes, how much

and how this eventually evolved over time? How was this territory organized and managed and how did this control develop? In order to answer these questions we have to struggle with the lack of evidences (or its fortuitous selectivity) and scholarship. However, combining literary and epigraphic sources, archaeological evidence, modern and contemporary scholarship, a quite reliable picture of the Southwest Palmyrena in Roman time comes out.

The most important source for establishing the importance and scale of the local economy is the so-called Tax Law. This bilingual, Palmyrene and Greek, inscription (*CIS* II, 3913) was discovered in 1881 in Palmyra just outside the agora. The stele is massive, around 1.75 m high and almost 5 m long, bearing almost 400 lines of text organized into four columns. The first one presents the Palmyrene title “The law of the taxes of the port of exchange of *Hadriana Tadmor* and the springs of water of *Aelius Caesar*” followed by the text of the local senate decree of 137 A.D. both in Greek and Palmyrene. The second column is the Palmyrene version of the law; the third and the fourth columns, very damaged, are the Greek version. The text was initially interpreted as the taxation for goods coming from the Far East to Palmyra, consequently being an evidence for the famous wealth of city but, analyzing the listed commodities, it is clear that the reference is to local market traffic.

Scholars now agree to consider the inscription as a homogeneous text starting with the fiscal law emanated in A.D. 137 by the council of the city both in Palmyrene and Greek (P. 2-62 and G. 1-93), maybe based on a Latin original. Then, the tariff reports a fragment of an ancient law “according to an agreement made in presence of *Marinus* the governor” (P. 63-149; G. 94-237), which recalls an edict of *legatus pro praetore Gaius Licinius Mucianus* (G. 151-237; P. 74-149). In turn, the edict of *Mucianus* refers back to earlier pronouncements of *Germanicus Caesar* (P. 182) and *Domitius Corbulo* (P. 196-197). They all date to the 1st century A.D., clearly proving an intervention of the Roman authorities in the affairs of the city already since that time. The dispositions added later in A.D. 137 were intended to avoid disputes that had arisen between tax collectors and the merchants, tradesmen and others involved in the tax levy (G. 7; P.7).

The Tax Law informs us that the city could rely on its direct hinterland for an essential natural resource of any ancient (and modern) economy: salt. In fact, until recently, salt was collected after natural evaporation in the summer from a large (nowadays up to 510 m²) area called Sebkhath al-Mouh, or mud-flat, just south of oasis. Unfortunately, it is not possible to establish how extended the area was in antiquity. This would be useful in order to estimate the amount of salt available for sale and, eventually, whether imported salt was required, perhaps from the known Mesopotamian saline. Moreover, due to a lack of archaeological evidences, we do not know how and by who the extraction process and transportation was carried out. Nevertheless, ethnographical and

geographical comparisons strongly suggest that also nomads or semi-nomads (pastoralists) could have been involved in both the extraction and salt transport to the local market. For example, we know the case of the Solubba, a semi-nomadic, modern, possibly attested also in Assyrian texts, tribe who was used to migrate from the Arabian peninsula up to Palmyra during the summer period for hunting ungulates herds (gazelles, ostriches and antelopes) but was also involved in the collection of salt from local saline in the southern Djazirah. This was clearly important for their own salting of gazelle meat and hides; but salt in surplus was also traded in Mosul, Baghdad, Deir ez-Zor, and other towns. The high concentration of desert kites, namely ungulates traps, in the Jebel Hayan, al-Khan and al-Abtar mountainous region, directly connected with the Sebkhah al-Mouh through the Wadi al-Hallabat, relates the presence of gazelle not only to migration paths but also to the abundant availability of salt from the nearby salt lake and can explain Solubba's migration there too. It may be possible that, in Roman times, semi-nomadic or nomadic tribes, like Solubba, as well as indigenous were employed seasonally by the local administration or by the land owners to gather the salt and transport it to a market. Of course, this system of salt gathering could probably have existed alongside with other economical mechanisms of salt procurement and trade.

Despite the poor attention given by modern scholarship to the Palmyrene salt trade, the Tax Law informs us that it was an important local (and possible trans-regional) commodity and its taxation was a considerable source of income for the city (1 *assarius* per *modius*). Both sale and purchase of salt was strictly monitored and taxed by Roman state, which demanded the direct management and control of the process to the local authorities. Some margins for local action were in any case probably still possible. With the aim of limiting abuses of the publicans and/or possible conflicts between the counterparts, the law established that salt had to be sold in a public space, the exact unit of measurements for calculating the duty (1 *modius* = 16 *sextarii*) and the correspondence between the official currency and the local one (*assarius* = *Italicum assarius*). Moreover, in order to avoid frauds in the declared amount or tax evaders, probably quite common, tariff clearly stated penalties (2 *sestertii* per *modius*).

Apart from the limited exploitation of this natural resource, the two main economical strategies adopted in the Southwest Palmyrena were pastoralism and agriculture. In fact, despite Pliny's statement, the region is not strictly speaking a desert, but a dry-steppe, or "badiya" in Arabic, characterized by an uncertainty and irregularity of rainfall, by a vegetation mostly consisting of salt-tolerant perennial shrubs with a spring bloom of grasses and flowering plants and by very few permanent water sources. Such hard climatic environment has deeply shaped the lives of its inhabitants and any of their form of economic activities. Livestock raising, both as extensive and

intensive husbandry, is likely to have been the dominant economy of this marginal zone because it provides more security than fixed-place agriculture. Extensive husbandry in the Syrian steppe, for which mobility is an essential component, has involved mainly seasonal (cycling) movements in and out of marginal zone, i.e. Rowton's "enclosed nomadism". This appears to be confirmed from the Tax Law which testifies that the territory was not only exploited by Palmyrene families but also by pastoral nomads entering the grazing fields on seasonal base. Due to the lack of archaeological data, it is not possible to establish the annual cycle of herders but most probably it was a seasonal cycle involving penetration into the deep steppe in winter and spring, and a retreat to a verdant fringes, or to oases and permanent water sources during summer months. This move was in most cases linked to the agricultural cycle, so that flocks could be grazed on the stubble after harvest at the same time fertilizing field with their manure. Still in modern time, sheep and goats were the principal animals raised by pastoralist in the Syrian steppe, because their feeding and mobility habits are best suited for such natural environment. In fact, sheep are mentioned in the Tax Law, while, strangely, goats are not cited. They may have been included where the text is now missing. In any case, there is an implicit reference: goat's skins are, with alabaster vessels, the containers used to carry goods. The tariff mentions a variety of other animals, which included both pack (camel, donkey and mule) and food (sheep and lamb) animals. Iconographic evidences, such as *tesserae*, confirm the fact that they were bred locally. These small clay tokens utilized to gain entrance to banquets and other gatherings in the everyday life often depicted them. Secondary products as animal fat and skins are also listed in the Tax Law. Only imported (Italian) wool is mentioned, which has been recovered in funerary context together with local woolen remains. Pastoralism and sheep-herding are linked also to leather and other industries making use of skins, which we know were used at least for making rafts, as attested both in the Tax Law and in a Greek inscription (*IGLS XVII, 59*).

Concerning the social relationship between pastoral nomads and settled farmer population, despite the common idea, there was no permanent social conflict but, instead, the two modes of economic subsistence were intimately connected. In fact, since pastoral nomadism was characterized by constant natural instability, it has never been self-sufficient. Pastoral nomads, therefore, needed sedentary farming and urban societies for their efficient functioning and their very existence and vice versa. Of course, conflicts could arise both between sedentary and nomads than among nomadic tribes but this has never been the norm. The ancient society and its social and economical dynamics were definitely far more complex and multifaceted than what modern scholars sometimes believe or can even understand.

While it is undeniable that livestock raising was likely the dominant economy of such marginal zone, as still attested for Late Antiquity by a passage of Procopius (6th century A.D.), agriculture cannot be completely denied as it has been. All area is below the 250 mm isohyet of rainfall per year, which represents, at least theoretically, the limit between dry farming and irrigated agriculture but, as already highlighted above, despite Pliny's statement, the region southwest of Palmyra is not strictly speaking a desert: rain falls every winter, even if irregularly, and the climate was probably more wet in Roman time. In the region, the most "regular" water supply is represented by a seasonal watercourse, namely a *wadi*, besides the oases like Palmyra, al-Qaryatayn and Damascus, which are naturally fed by artesian sources. Therefore, agricultural exploitation of the dry steppe was (and is) not only a question of precipitation but of water management. For this reasons, and far earlier than the Roman time, inhabitants of the region had to develop different engineering solutions to retain as much water as possible for a medium-long term, both for human consume and for secondary purposes. Only hydraulic techniques, that lead to a less extended evaporation, were and still are the most efficient in such environmental contexts. Concerning technical constructions skills, the Roman period appeared to be not innovative. They simply kept using older technique. Therefore, dating hydraulic structures in the area is not easy; most of them have lasted for a long time and/or have been re-used centuries after their abandonment. They also can have been constructed before the Roman period but kept in function during that time too. Consequently, water infrastructures observed only from ground surveys or from satellite images are the product of a "chronological squeeze" that, without systematic investigations, can lead to historical and archaeological misunderstandings.

Structures dedicated to storage and regulation of water distribution in the Southwest Palmyrena varied for simple facilities as cisterns, reservoirs, both closed or open (*birkets*), and wells to more elaborated ones as barrages or dams and surface or subterranean channels, such as *qanat*. A *qanat* or chain well is a subterranean gallery that taps an aquifer and leads it to lower-lying ground using gravity principle. It is the best suited for such arid environments because reduces to the minimum the water's loss and transports considerable quantity of water even for long distances. All the installations listed above require efforts and investments both in term of cost and manpower. Relative basic hydraulic works (simple barrages, cisterns and small reservoirs) were easily accessible also to small villages communities. For this reason, they are wide spread around the region but, as we have seen, it is difficult to prove without excavations that all belongs to the Roman period. On the other hand, the most elaborated hydraulic systems, such as *qanawat*, aqueducts and dams, were presumably organized by cities or directly by the Roman state. An example of such investment in a long-term perspective is the Western *qanat*/aqueduct that the new

archaeological data of the Syro-Italian mission has led to reconsider. This complex system was constructed during the 2nd century A.D. (and restored many times later) to collect and canalize water from the monumentalized source of Jebel Ruseiat, west of Palmyra, for *c.* 9 km to the city. The main purpose was probably to provide drinkable water for the oasis's population, since the water of the two sources of the city (Efqa spring and "Serail source") was sulfurous, and for general civic needs. At the same time, I believe it was also exploited for agricultural purposes even before reaching the immediate surroundings of the oasis, like was still in modern time at the farm called Mazraet Abou Fawares. The reference of an annual water-tax in the Tax Law (P. 58, G. 88), very high if considering only drinkable use, leads to support this idea.

Another example of a central strong power promoting investment in water supply is the Harbaqa arched dam, which lies 70 km southeast of Palmyra. This massive barrage, with its 345 m of length and 21 m of height, is one of the biggest in the entire Near East but its dating is still very controversial. Scholars are divided between the assignment to the Roman period or the Omayyad one. Without further excavations and analysis it is not possible to settle the chronological issue but, regardless of who built it, the aim was to largely improve the agricultural productiveness of the area. In any case, all the surveyed hydraulic systems allowed to exploit lands that otherwise, in areas with a climate so restrictive, could not have been settled or agriculturally exploited.

A simple and natural agricultural technique, often ignored by scholars, is the *wadi*-production: since the sediments accumulated in the *wadi*'s bed are thick and silted and the water accumulates there during the rainy season, the soils remain wet for longer than anywhere else. Thanks to this, some cereal crops can be planted in wet years despite the scarcity of average annual precipitation. This system was still employed at the beginning of the 20th century: cotton was grown in the sediments of the Harbaqa's reservoir as attested by historical photos. Without further evidences it is possible to only hypothesize that this could have been the case for some settlements near *wadis* such as Khan al-Hallabat, Harbaqa fort, Khan al-Qattar, al-Basiri, Khan al-Manquora, Khan al-Trab.

The fact that cultivation was practiced to a substantial degree within the Palmyrene territory is supported again by the Tax Law. The tariff refers to a lot of agricultural products for which taxation is established: dried goods (nuts, almonds, pistachios and similar), olive oil, salt fish, wheat, wine, fodder and pinecones. These products were relevant to the normal functioning of the life in the region of Palmyra. All other archaeological and epigraphical data acquired and compared, despite being very scanty, seem to suggest that these goods were produced locally. Besides the Western *qanat*/aqueduct and the Harbaqa dam, if its Roman date can be assured, some products suitable to salty terrains, as for example palm trees, could have been grown in the

margins of a Sebkhath al-Mouh. Moreover, the area around al-Bakhra, including al-Bazzurye and al-Sukkarye, is very rich of water thanks to the presence of an artesian spring. A funerary inscription dating to A.D. 171 (*PAT* 1791) may infer that the area was already exploited in classical time for agriculture, horses and camels breeding by Palmyrenes. The al-Karasi altars' group, which were erected *c.* 20 km southwest of Palmyra in the 2nd century A.D. in order to consecrate a grove of tree and the cultivation of the surrounding area during a sort of agricultural spring festival, proved that an agricultural exploitation of the area, connected also perhaps with the *qanat* running not far north, was already carried out in the Roman time as it is today. Furthermore, there is a high chance that all the area south of the Jebel Rawaq was settled (temporarily?) in a much less extended way than in Late Antiquity also in the Classical period. Considering the fact that some of the forts' sites are located near a *wadi* may lead to the possibility of a limited agricultural exploitation of the area also before the 3rd century A.D.

Therefore, it is very likely that agriculture could have been practiced in limited amount in some areas with a rational management of the water resources. Mobile or nomadic pastoralism was, and still is, one of the mainstays of the economy of people who exploited land of the Syrian steppe but herders rarely relied exclusively on pastoralism as a means of support. Food-production strategies usually involved a mix of subsistence options. Pastoralists often forage for wild plant resources, hunt wild animals (gazelles and other ungulates) and seasonally cultivated. Similarly, agricultural settled population keep livestock, collected wild plants and hunt. The two modes of production, i.e. agriculture and pastoralism, were combined in an interacting economic and social system that successfully exploited the regional resources. In fact, the Tax Law highlights the integration of the city and countryside, in particular related to food production, necessary to sustain the community's development.

To conclude this economical analysis, we can say that Palmyra's growth and prosperity as a community, at least for the first three centuries of Common Era, without denying the main role of the long-distance trade, depended also on its management of the human and material resources within its hinterland. They were in some way mutual. Moreover, the economic and social relation between city and hinterland was a complex but integrated system. The city, as highlighted by the study of Tax Law, clearly relied on its hinterland both for natural resources (as water and salt) and for agricultural and pastoral products. At the same time, the city acted as an economic and administrative center, which organized and managed the exploitation, the products' redistribution and taxation within their territory and with the outside. Therefore, both the city and the Roman state were acting in their own interests by exploiting the local resources and by stimulating the primary mode of production. This fact is further confirmed by the Tax Law which clearly

distinguishes between produces carried to and from the villages in the territory of Palmyra, where no charge is exacted, and loads brought in from outside its boundaries subjected to a 1 *denarius* taxation (G. 187- 191). Moreover, the text (P. 149, G. 233-237) divides between animals brought into the Palmyrene territory for grazing, subjected to a tax and to have the livestock branded, and other local animals, which were not liable to the same tax or perhaps even immune. These are clear attempts to support and promote internal exchange of local production. The milestone from Qasr al-Heir al-Gharbi (AE 1939, 180), which delimits the territory between Palmyra and *Emesa*, has to be intended considering these multiple aspects.

At the same time, cities were also the products of complex social processes between country-dwellers and city-dwellers. Instead of a simplistic “one versus the other” relationship, their interactions both in economical and social terms might be described as more symbiotic and as the results of a more ancient historical background. In this respect, it seems that Roman power in the area “simply” appropriated and re-framed older forms of economical and social interactions.

For what concerns the development of this economic and social relationship between city and southwest hinterland, after the “fall” of Palmyra in the end of the 3rd century A.D., the situation appears quite blurry. The city saw probably its role of economical, organizational and promoter center quite reshaped. It may have been replaced in this function and/or in some aspects, if we consider the late rural settlements of Al-Bazzurye and al-Sukkarye probably connected with the Late Antique fort of al-Bakhra by the forts regularly implanted in the Southwest Palmyrena. It is difficult to agree with some scholars that Late Antique soldiers (*limitanei*) became themselves part-time farmers but it may be not unrealistic to consider that, as in other similar political and geographical areas of the Near East (Kerak Plateau), through judicious use of the little water available, at least a limited amount of agriculture was practiced around the fort of the Southwest Palmyrena in order to provide a minimum degree of food self-sufficiency for the garrisons. Of course, without further investigations, this suggestion remains only a hypothesis but it is undeniable that some forts, as Khan Al-Manquora Khan al-Qattar and Al-Bakhra, displayed quite complex hydraulic systems and most of them could rely on the presence of one or more *wadis* nearby. The same hypothesis is valid when talking about meat subsistence of soldiers. There is a high degree of chance that some sort of limited animal breeding (still sheep and goats mainly) was carried out in the proximity of the forts, as attested by the enclosure at al-Bakhra, or in the territory under their control. Garrisons were, therefore, probably able to maintain an economy of semi-autonomy also concerning meat assumption and livestock derived.

In antiquity, the control of production and food distribution, but also of natural resources and especially water, as well as the control the lines of communications was a surest way to the

appropriation of space and authority in such environment. In fact, roads were an instrument for territorial control and for guarantying interaction and connectivity among places and people but also for promoting urbanism and economy.

From a road network point of view, the Southwest Palmyra was a strategical connectivity hub, both for local and long distance communications. In fact, the discoveries of the joint Syro-Italian mission of Prof. Morandi Bonacossi and Cremaschi have highlighted the importance of the connection of Palmyra with the Northern Syria. A sequence of 16 milestones has been recovered *in situ* during the survey starting from 12 km west of Palmyra and more or less regularly distributed every Roman mile. Inscriptions have showed that the first monumentalized stage of the road dated to A.D. 198. It was probably related to the general program of reorganization of the eastern provinces by Septimius Severus. The road which, via *Epiphaneia*, connected the main centres of the province of *Syria Coele*, Antioch and *Apamea* with Palmyra, the territories of the steppe and the Middle Euphrates and the emporia of the Persian Gulf, was of considerable importance for the military control of the eastern regions, for the organization and administration of the new province and for the commercial network. In this context, the restoration carried out by Caracalla, only fifteen years later, suggests both the important role played by the route, increasing its ideological value but, at the same time, it could have corresponded to a real need.

These new discoveries have also allowed to reconsider the role of the road leading to *Emesa*/Homs as main network for the Eastern goods imported by the Palmyrene merchants reaching the Mediterranean and then the entire empire. In fact, some of the surveyed milestones were already known but considered as belonging to the road toward *Emesa*. At the moment, the milestones surely coming from this road are of late date, i.e. end of 3rd century A.D. Moreover, it was assumed that the rise and decline of *Emesa* followed that of Palmyra, suggesting that it was its role as an entrepôt for Palmyra, which gave it its prosperity. A reconsideration of the archaeological and literary data has proved that, without denying that connections existed between the two cities and that the Emesene elite could have profited by the commercial attitudes of Palmyra, nothing seems, to date, to suggest *Emesa* as the main western terminal for the eastern goods coming through Palmyra. Since the last years of the reign of Augustus or the first of Tiberius until the Severan age and probably even later, the route from Palmyra to Antioch, via *Epiphania* and *Apamea*, was probably the most important for linking Palmyra and the Mediterranean ports. This does not mean that other routes were not in use at the same time and with the same function, both on a local and large scale.

Indeed, according to the Peutinger map, a road running north of the Jebel Rawaq, marked by eight stop stations, connected Palmyra with Damascus between the 1st and the 3rd century A.D. A

second alternative route run probably south of the Jebel Rawaq but, if the archaeological data strongly point toward this assumption, the fact cannot be ascertained. There was likely a third road, which had in common most of its stretch with the first one, running “halfway” between the other two. Unfortunately, this one too is not epigraphically attested. In any case, these three roads were not isolated each other but connected through secondary roads crossing E-W the Jebel Rawaq where possible. In fact, the nature of the region, its relief and available water supply exerted a great influence on this part of the road system. The line of the Jebel Rawaq and the few sparse water resources determined the path that could be chosen, while the gaps and saddles across the range indicated where the road’s crossing had to be built.

Epigraphical evidences only provide a solid late-antique date for the road running south of the Jebel Rawaq. This road connected nine forts, plus other military installations remains, surveyed in the Southwest Palmyrena. As it is the case for these military installations, the milestones dated to the Diocletian reign (A.D. 283-305) and have been later repaired until Constantine (A.D. 324-337). The role of this road is an important issue among ancient historians and archaeologists of frontier studies because it is framed in a broader debate on different concepts of frontier and its evolution in Late Antiquity. In fact, based on what written on some milestones, scholars have named this road *Strata Diocletiana* and, despite the fact that milestones have been more or less regularly repaired only from Arak (km north of Palmyra) to Khan Abou Shamat and just one has been found 12 km to the south near Sa’ne, the common idea was to suppose that it run from Sura on the Euphrates down to Bosra via Palmyra. Together with forts, regularly located along it, this complex system of road and military installations has been considered a militarized frontier established by Diocletian in order to control a persistent, though low-intense, external threat from nomadic Arab tribes.

However, it has been clearly demonstrated that it is not a single road running N-S but a network made of different stretches bearing different “names” and that, strictly speaking, only from al-Basiri to Arak/Erek the road is called *Strata Diocletiana*, an *unicum* in the Roman time. This may be connected with different local responsibilities over the road and forts’ construction. In any case it would be wrong to consider all Eastern frontier as one single militarized zone. Recent archaeological projects have proved that each sections of the Roman *limes* displays different features and topology of development, caused by several factors. They have in common that they were re-organized and, in some cases, organized for the first time by Diocletian.

For what it concerns the purposes for the creation of such system (road+forts), the evidences cited by scholars who sustain a permanent conflict among sedentarists and nomads appear not to be strong enough. Of course conflicts raised and the military units located there could intervene in

case of necessity, but in this area settled and nomadic population, as we have seen, have always naturally co-existed because they were economically (and socially) mutually interdependent. The military character of the system is undeniable but it is likely that it was conceived as poli-functional: it could exploit everyday local police duties, i.e. patrolling both movements and the few natural resources available and implementing taxation purposes. Moreover, if required, small offensive or defensive operations could have been carried out in case of conflicts among or between different groups. Also, new or restored road connections let troops, travellers and goods to move faster and safer while forts provided the possibility of regular resting place. At the same time, the system could have been a propagandistic instrument for the central power to show its control over the territory both to local population and nomadic groups.

This system of road and forts coincided with a new development in the control and management of the territory in Late Antiquity. The city of Palmyra, during the first three centuries of modern area, has been able to control and exploit its large and socially complex territory, as well as to make the most of its long distance trade possibilities, thanks to its dimorphic social organization. The combination of all these strategies let the city to flourish and develop as a community. With its fall in A.D. 272 after the “revolt” of Zenobia and Vaballathus, which coincided apparently with the end of its commercial role in the long distance trade and, therefore, of its community and social organisation, there was the need to find a new way of managing and controlling the territory and the social groups interacting there. It seems that already Aurelian began to restore the imperial authority over the wide territory controlled by Palmyra but his assassination in A.D. 275 brought back the empire in a political instability. Then, several emperors ruled in quick succession (mostly soldiers from the Illyrian provinces), as well as several usurpations burst. When Diocletian arrived on the throne in A.D. 284, he (re-)organized an integrated system of a series of roads and military installations in the Southwest Palmyrena as part of a wider Near Eastern plan, in order to ensure a “new trend” in control of the steppe, aiming to strengthen this frontier area after many years of political, economical and social troubles after the fall of Palmyra. The fact that milestones inscriptions also along the roads toward *Emesa* and *Epiphaneia-Antiochia* display Diocletian’s restorations supports this idea. At this time, these two roads constituted the transverse axes (internally directed) of the system.

The analysis of the communication network of which the Southwest Palmyrena was part of, has highlighted the fact that this system was very complex and that there was a coexistence of more routes that offered different options, both in term of time, security and cost, which developed and changed in importance and use over time.

To conclude, I have demonstrated how an apparently marginal region, such as the Southwest Palmyrena, has been of main importance for the economic development of the oasis and for its networks of exchange, communications and contacts with other areas of the Near East but also of the entire antique world. Therefore, controlling the Southwest Palmyra was very important for the Roman power. The area was strategically important for mastering short and long-distance communications, to manage local economy and the social/political relationships with nomadic tribes.

Gazetteer 1: Forts of the Southwest Palmyrena

a) Ancient toponymi

Modern name	Toponym on milestones	ND <i>Orientis</i> 32	Bibliography
<u>Harbaqa</u> (site nr. 22)	-	l. 38 <i>Verofabula,</i> <i>Ala I Saxonun</i>	Bauzou 1989a, 323-325, Pl. 63-65; Genequand 2003a, 58-59, Figg. 44-47; Genequand 2004b, 20-21, Fig. 16; Lenoir 2011, 88-89, Fig. 42; Mouterde 1930, 231; Poidebard 1934, 55, Pl. XXXII.
<u>Khan al-Abyad</u> (site nr. 11)	-	Unknown, perhaps l. 34: <i>Mons Iovis</i> (Bauzou 1989a, 332)	Bauzou 1989a, 331-332, Pl. 70; Gregory 1995-1997: 1996, 199-200, 1997, E3.1; Lenoir 2011, 83, Fig. 34; Poidebard 1934, 49, Pl. XXXIX, XLIII.2.
<u>Klebiye</u> (site nr. 12)	-	-	Gregory 1995-1997: 1996, 255-256, 1997, E.26.1; Musil 1928, 135, Fig. 32; Poidebard 1934, 49.
<u>Khan al-Hallabat</u> (site nr. 13)	BERIARAC (CIL, III, 14177/4) BERIARACA (?) (Bauzou 1989a, 286-291 nr. 93-109; 1993, 44- 45)	l. 34 <i>Ueriaraca,</i> <i>Ala noua</i> <i>Diocletiana</i> ¹²⁹⁷	Bauzou 1989a, 329-330, Pl. 68-69; Bauzou 1993, 33-34, 44-45; Burton 1972, 364; Dunand 1931, 241, 247; Bounni, al-As'ad 1989, 127; Kalinka 1900, 23-24; Kennedy, Riley 1990, 203-204, Figg. 151-152; Gregory 1995-1997: 1996, 201-203, 1997, E4.1-2; Lander 1984, 201; Lehmann 2002, 268 (366.266), Tav. 20 nr. 16; Lenoir 2011, 84-85, 342-343 (about its <i>principia</i>), Figg. 35-39; Musil 1928, 91-94, Fig. 25, Poidebard 1934, 48-49, Pl. XL-XLII; Van Berchem 1952, 13.
<u>Khan al- Qattar</u> (site nr. 14) Bordj el-Salib ¹²⁹⁸	CARNELA/ CARNEIA (Bauzou 1989a, 283-286 nr. 76-92; 1993, 44)	l. 33 <i>Mons Iovis,</i> ¹²⁹⁹ <i>Ala Prima</i> <i>Damascena</i> (Bauzou 1993, 43; Lenoir 2011, 87) or	Bauzou 1989a, 326-328, Pl. XXXVIII-XXXIX; Bauzou 1993, 44; Calvet, Geyer 1992, 100-105, Fig.59; Dunand 1931; 241; Gregory 1995-1997, 1996, 206-207, 1997, E6.1; Kennedy, Riley 1990, 204-205, Figg. 153- 154; Lenoir 2011, 87; Musil 1928, 241, 253; Poidebard 1934, 48,

¹²⁹⁷ Seeck's edition of the ND reports *Ala noun Diocletiana*.

¹²⁹⁸ Secondo Dunand 1931, p. 583 Bordj el-Salib sarebbe il fortino nelle vicinanze del miliario mentre al-Qattar la montagna su cui questo si addossa.

¹²⁹⁹ Sarebbe la traduzione latina del semitico *Qarn el che significa "somettet du dieu".

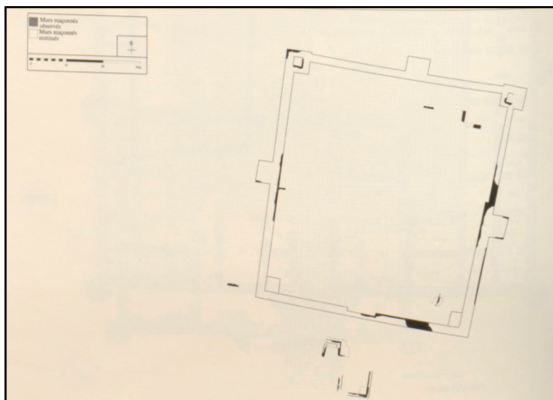
		<p>I. 37 <i>Neia,</i> <i>Ala prima</i> <i>Alamannorum</i> (Bauzou 1989a, 328; 1993, 44; Lenoir 2011, 87; Van Berchem 1952, 16)</p> <p>or</p> <p>I. 35 <i>Cunna,</i> <i>Ala prima Francorum</i> (Kennedy, Riley 1990, 204; Bauzou 1989a, 328)</p>	<p>Pl. XXXVIII-XXXIX; Van Berchem 1952, 13,16.</p>
<p><u>Al-Basiri</u> (site nr. 15)</p>	<p>AVIRA</p>	<p>I. 9, 24 <i>Abira/Abina,</i> <i>Equites Sagittarii</i> <i>indigenae</i> (Bauzou 1993, 43)</p>	<p>Bauzou 1989a, 315-318, Pl. 59; Bauzou 1993, 42-43; Dunand 1931, 241; Genequand 2003a, 52-55, Figg. 35-38; Genequand 2004b, 22-24, Fig. 17; Gregory 1995-1997: 1996, 208-209; Lander 1984, 240, 255; Lehmann 2002, 83 (322.235), Tav. 20 nr.3; Musil 1928, 129-131 Fig. 30; Poidebard 1934, 47, Pl. XXX-XXXI.</p>
<p><u>Khan Aneybeh</u> (site nr. 16)</p> <p><u>‘Onébi</u> (Moritz 1889)</p> <p><u>‘Oneybé</u> (Von Oppenheim 1899-1900)</p>	<p>NAB (Bauzou 1989a, 278- 282 nr. 35-49; 1993, 40-41)</p> <p>*Anabatha (Kennedy, Riley 1990, 205; Van Berchem 1952, 13)</p>	<p>I. 41 <i>Oneuatha,</i> <i>Cohors quinta pacata</i> <i>Alamannorum</i></p>	<p>Bauzou 1989a, 314, Pl. 58.1; Bauzou 1993, 40-41; Dunand 1931, 240; Gregory 1995-1997, 1996, 211-212, 1997, E8.1; Kennedy 1990, 205, Figg. 155-156; Lenoir 2011, 90-91; Musil 1928, 104-107, Figg. 26-27; Poidebard 1934, 46-47, 54, Pl. XXVII-XXVIII; Van Berchem 1952, 13.</p>
<p><u>Khan al-Manquora</u> (site nr. 17)</p>	<p>VAL. ALBA (Bauzou 1989a, 272-278 nr. 22-35; 1993, 38-40)</p>	<p>I. 42 <i>Valle Alba,</i> <i>Cohors prima Iulia</i> <i>lectorum</i></p>	<p>Bauzou 1989a, 301-313, Pl. 53-57; Bauzou 1993, 38-40; Burton 1872, 363-364; Calvet, Geyer 1992, 94-100; Dunand 1931, 236-240; Gregory 1995-1995: 1996, 213-214, 1997, E9.1; Kennedy, Riley 1990, 181-183, Figg. 128-129; Lander 1984, 226; Lenoir 2011, 92-93, Figg. 45-47; Moritz 1889, 14-15 n. 2; Musil 1928, 31-33 Figg. 3-4; Poidebard 1934, 45-46, 52, 182-184, Pl. XX-XXV.</p>
<p><u>Khan al-Trab</u> (site nr. 18)</p>	<p>VAL. DIOCLETIANA (Bauzou 1989a, 267-272 nr. 2-22; 1993, 37-38)</p>	<p>I. 43 <i>Valle Diocletiana,</i> <i>Cohors secunda</i> <i>Aegyptiorum</i></p>	<p>Bauzou 1989a, 299-300; Bauzou 1993, 37-38; Gregory 1995-1997, 1996, 215-216, 1997, E10.1; Lenoir 2011, 95; Musil</p>

			1928, 108-109, Fig. 28; Poidebard 1934, 44-45, 54, Pl. XIX; Van Berchem 1952, 13.
<u>Khan Abou Shamat</u> (site nr.19)	????	<p>1. 43 <i>Valle Diocletiana,</i> <i>Cohors secunda</i> <i>Aegyptiorum</i> (Mouterde 1930 Poidebard 1934)</p> <p>Or</p> <p>1. 44 <i>Thama,</i> <i>Cohors prima</i> <i>Orientalis</i> (Dunand 1931; Bauzou 1993; Lenoir 2011)</p>	Bauzou 1989a, 296-298; Bauzou 1993, 36-37; Burton 1972, 364; Gregory 1995-1997: 1996, 217-219, 1997, E11.1-2; Lander 1984, 201; Lenoir 2011, 96, Fig. 50; Musil 1928, 8, 109-110, Figg. 1-2; Poidebard 1934, 43-44, 50, 54, Pl. XV-XVI.
<u>Al-Bakhra</u> (site nr. 9)	<i>AUATHA</i> (Bauzou 1989a, 401-403, nr. 91-93; 1993, 34-35, Inscr.G, Fig. 5)	1.22 <i>Auatha,</i> <i>Equites promoti</i> <i>indigenae</i>	Bauzou 1989a, 333-346, Pl. 71-76; Bauzou 1993, 46-49; Bounni, As'ad 1989, 128; Colosi <i>et alii</i> 1996, 55-60; Dunand 1931, 227, Genequand 2003a, 33-38, Figg. 2-9; Genequand 2004a, Figg.1-14; Genequand 2004b, 13- 18, Figg. 7-11; Genequand 2006b; Gregory 1995-1997: 1996, 196-198, 1997, E2.1; Lehmann 2002, 73-74 (382.269), Tav. 20 nr. 21; Lenoir 2011, 81-82, Figg. 32-33; Musil 1928, 88, 90, 141-143, 234, 286-287, 290-296, Figg. 38-39; Poidebard 1934, 52, 59, 66-67; Wiegand 1932, 13, Fig. 18.

a) Plans and satellite views¹³⁰⁰

Harbaqa fort (Site nr. 22)

Plan: Genequand 2004b, Fig. 16

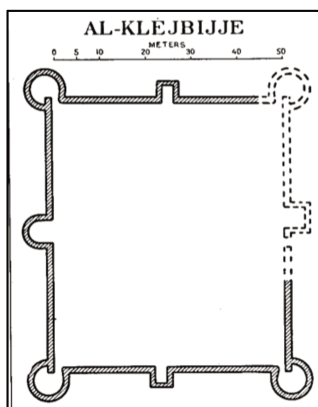


Satellite view: CORONA 1107-1122Aft (Jul 31, 1969)



Klebiye (Site nr. 12)

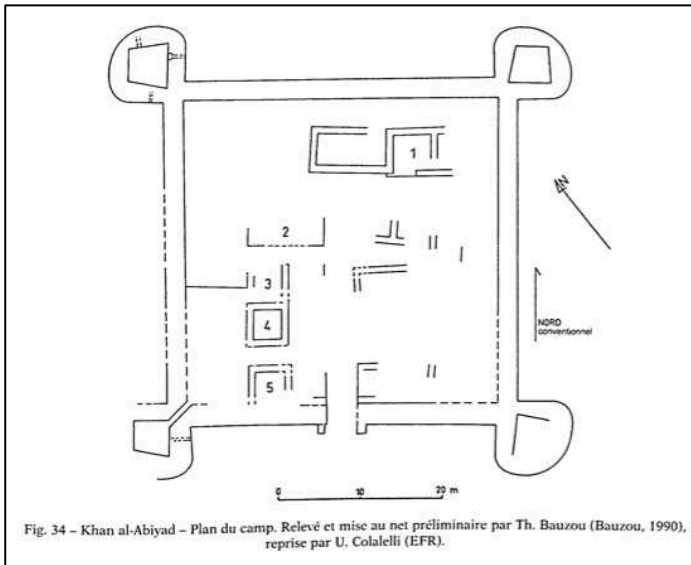
Plan: Musil 1928, Fig. 32



¹³⁰⁰ Plans included here are the most updated one. For a completed list (+ images) I refer to each site's sheet in chapter 3. Satellite views have been included only when are available in high resolution.

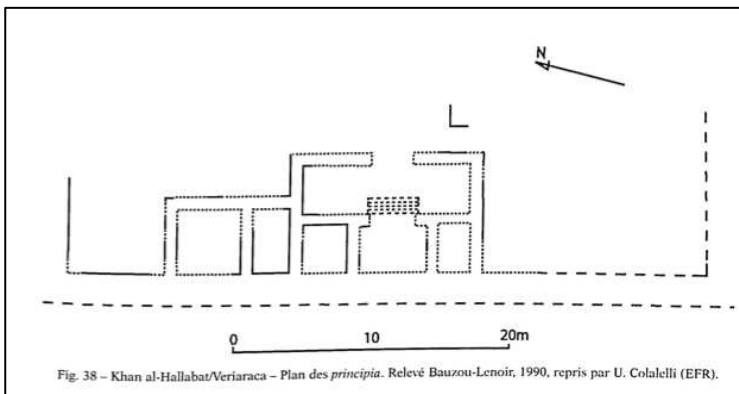
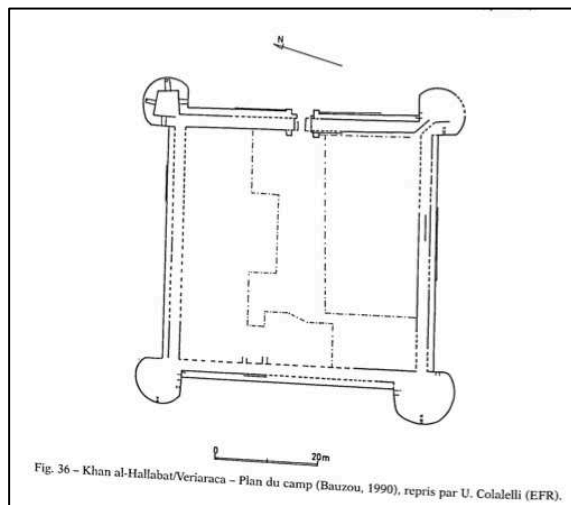
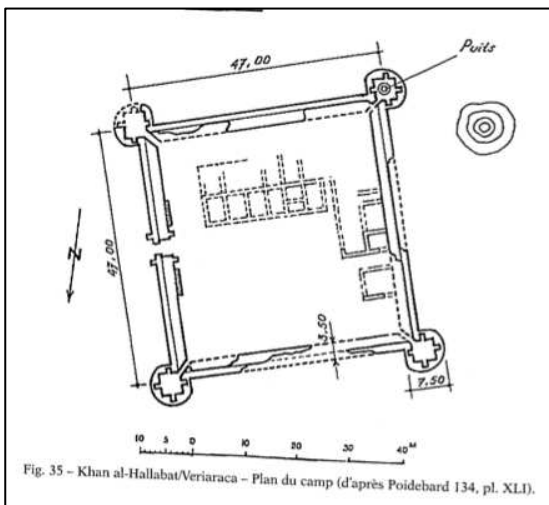
Khan al-Abyad (Site nr. 11)

Plan: Lenoir 2011, Fig. 34

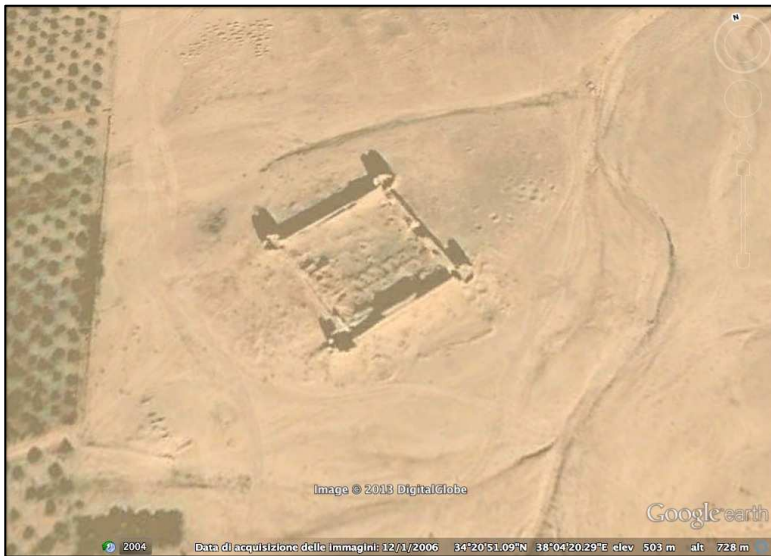


Khan al-Hallabat (Site nr. 13)

Plan: Lenoir 2011, Figg. 35-36, 38 (*Principia*)

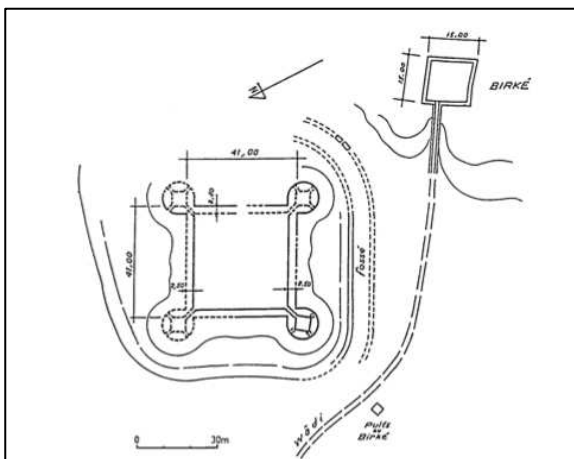


Satellite view: image produced from Google Earth



Khan al- Qattar (Site nr. 14)

Plan: Poidebard 1934, Pl. XXXIX

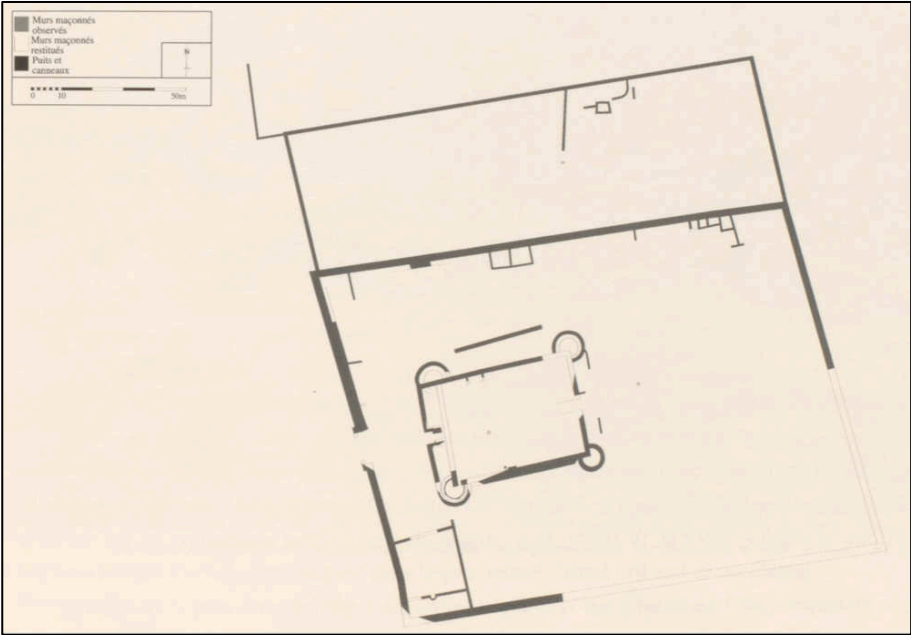


Satellite view: image produced from Google Earth



Al- Basiri (Site nr. 15)

Plan: Genequand 2004a, Fig. 17

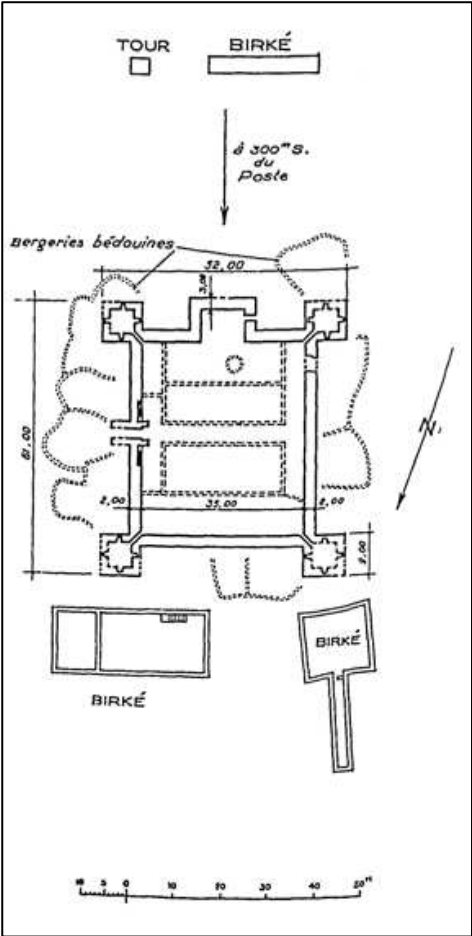


Satellite view: CORONA 1105-1009Fore (Nov 4, 1968) + 1107-1122Aft (Jul 31, 1969)



Khan Aneybeh (Site nr. 16)

Plan: Poidebard 1934, Pl. XXVIII

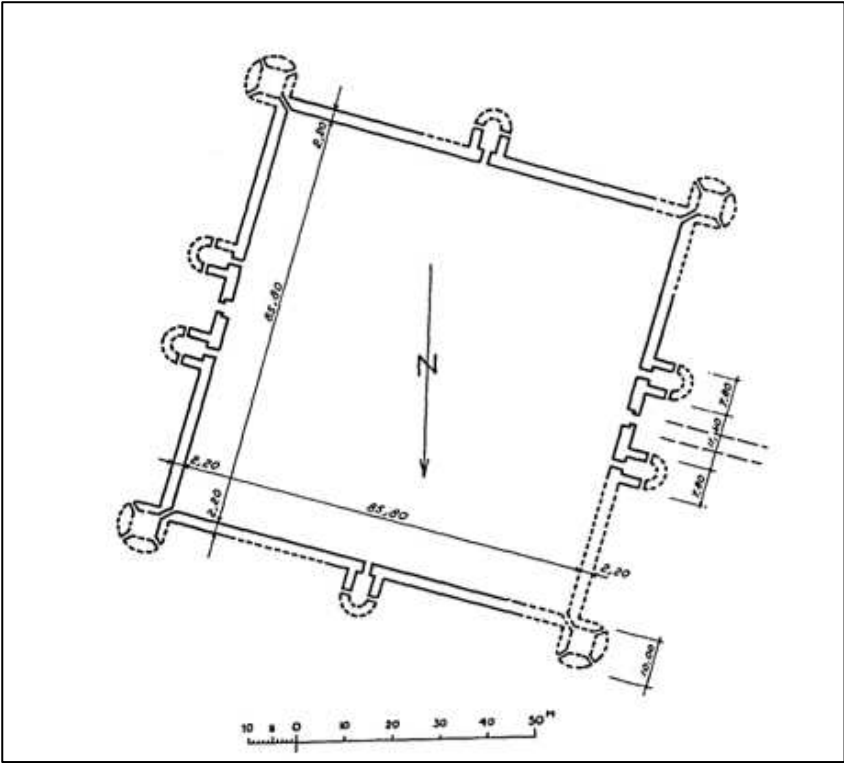


Satellite view: image produced from Google Earth



Khan al-Manquora (Site nr. 17)

Plan: Poidebard 1934, Pl. XXI

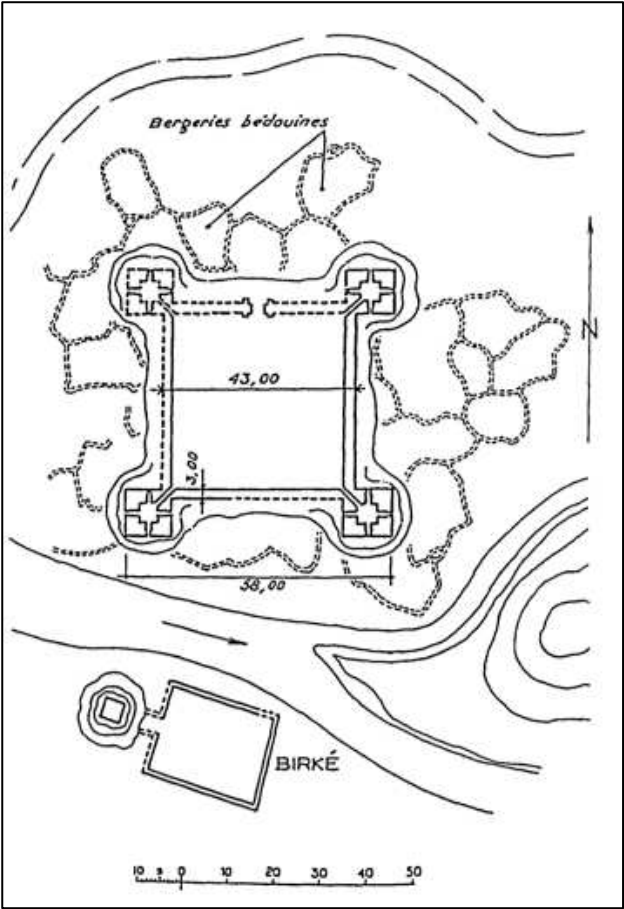


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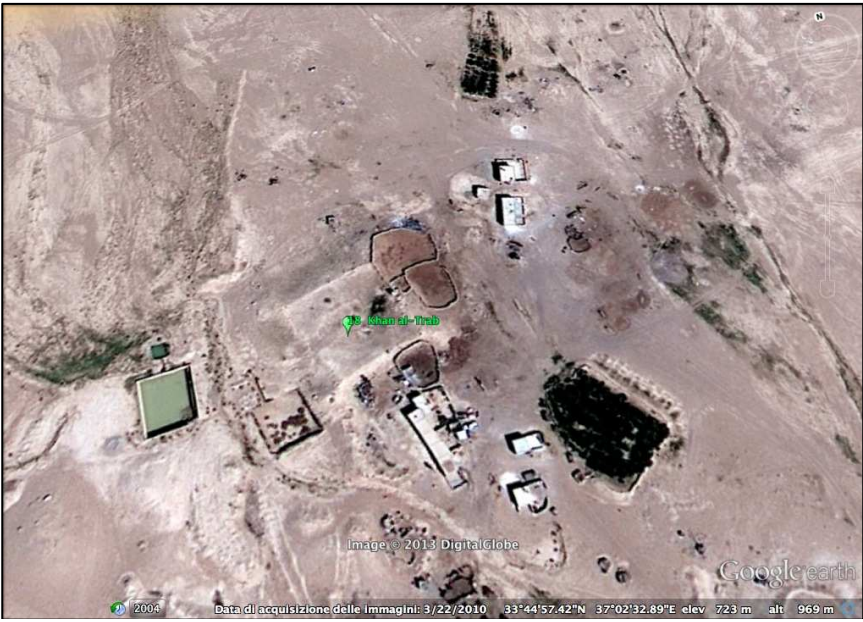


Khan al-Trab (Site nr. 18)

Plan: Poidebard 1934, Pl. XIX

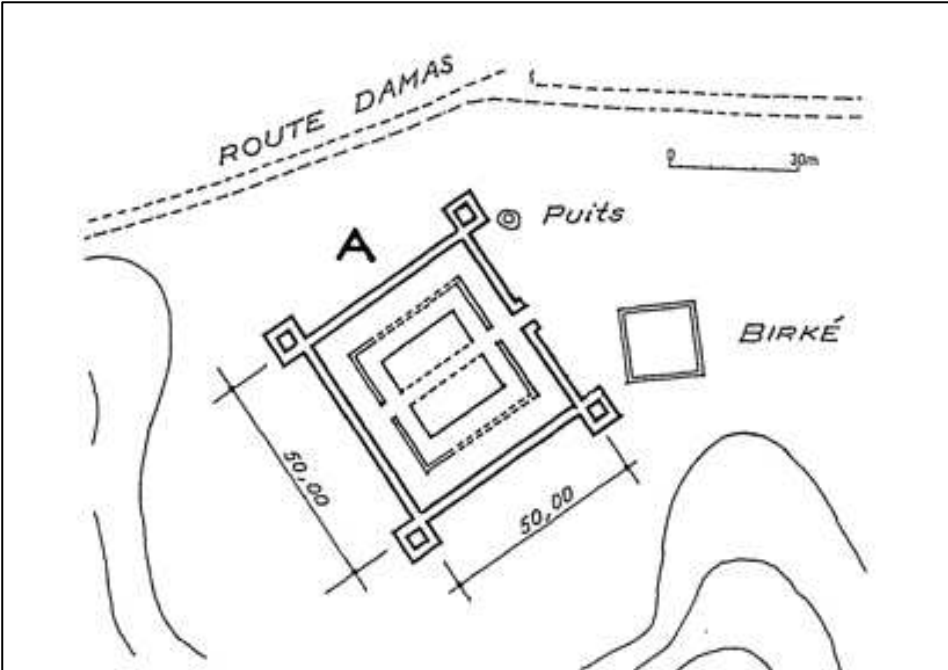


Satellite view: image produced from Google Earth



Khan Abou Shamat (Site nr.19)

Plan: Poidebard 1934, Pl. XVI

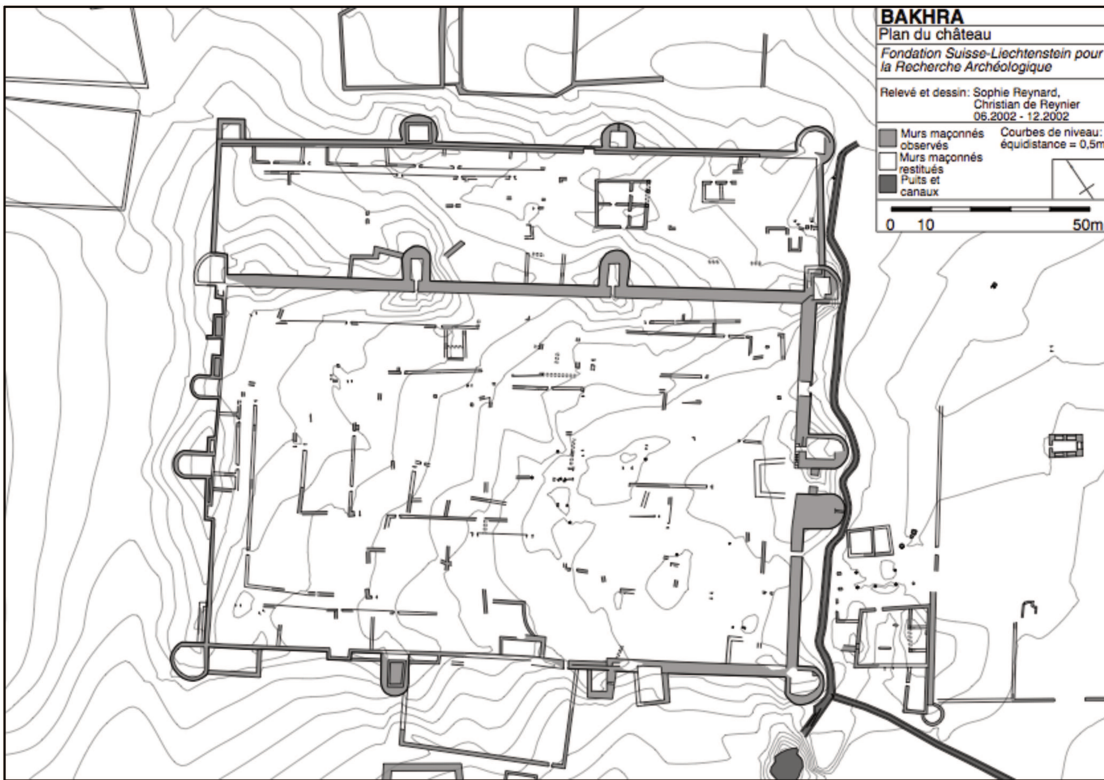


Satellite view: image produced from Google Earth

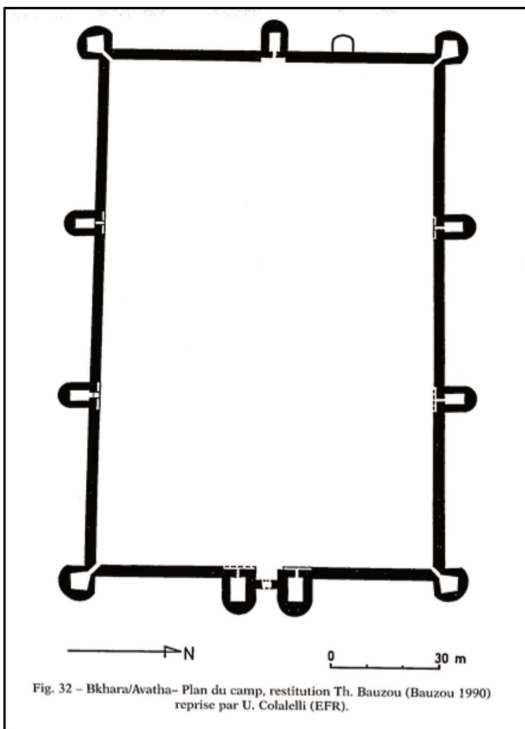


Al-Bakhra (Site nr. 9)

Plan: Genequand 2004a, Fig. 2 = Genequand 2004b, Fig. 8



Plan: Lenoir 2011; Fig. 32



Appendix: The milestones of the *Strata Diocletiana*

a) Sa'ne (8 km N-E)

Bibliography: Dunand 1931, 228; Bauzou 1989a, nr. 1; 1993, 32 Inscr. D

Inscription: *Strata/ Diocletiani (et)/ Maximiani /Aug(ustorum) / (et) Constanti (et)/ Maximiani/ M(ilia passuum) XCIII (?)*.

Dating: A.D. 285- 292 + perhaps a later addition from Constantine (l. 5= *Constantinni*)

b) Khan Abou Shamat (= site nr. 19)¹³⁰¹ – Khan al-Trab (*Valle Diocletiana* = site nr. 18)¹³⁰²

Total distance in km: *c.* 17.5 km

Average of Roman mile:¹³⁰³ 1.459 km

Notes:-

Mile	Mile on stone	Number of milestones ("Bornes"/"stèles") ¹³⁰⁴	Series	Dating	Bibliography
11 (from Khan al-Trab)	none		-	-	Bauzou 1989a, 267, Site 2
10 (from Khan al-Trab) = 3 km E of Abou Shamat	illegible	1 inscribed "borne"	-	A.D. 293-305: <i>Diocletiano et Maximiano Augustis; Constantio et Maximiano Caesaribus</i>	Dunand 1931, 417; Bauzou 1989a, 268, Site 3, nr. 2
9 (from Khan al-Trab)	[V] IIII (?)	1 "borne" + 2 "Stèles" anepigraph	-	-	Dunand 1931, 417; Bauzou 1989a, 268, Site 4, nr. 3
8 (from Khan al-Trab)	none		-	-	Dunand 1931, 417; Bauzou 1989a, 268, Site 5
7 (from Khan al-Trab) = 10 km W of Khan al-Trab	none	1 "borne" anepigraph 1 "borne" hammered illegible (but with traces of red color) 1 "borne" erased 3 "stèles" "with same inscriptions	-	A.D. 293-305: <i>Diocletiano et Maximiano Augustis; Constantio et Maximiano Caesaribus</i>	Dunand 1931, 417; Bauzou 1989a, 268, Site 6, nr. 4-8
6 (from Khan al-Trab)	none	3 "stèles" with same inscriptions	-	A.D. 293-305: <i>Diocletiano et Maximiano Augustis;</i>	Dunand 1931, 417; Bauzou 1989a, 268, Site 7, nr. 9-11

¹³⁰¹ Bauzou 1989a, 267, Site 1.

¹³⁰² Bauzou 1989a, 270, Site 13.

¹³⁰³ For the distances and value of the Roman mile in each sector I refer to Bauzou's measurements (Bauzou 1989a, 295).

¹³⁰⁴ For the terminology employed I have followed Bauzou's distinction between "borne" and "stèle" (Bauzou 1989a, 266).

				<i>Constantio et Maximiano Caesaribus</i>	
5 (from Khan al-Trab)	none	2 anepigraph “bornes” 1 anepigraph stèle 1 “borne” base	-	-	Bauzou 1989a, 269, Site 8, nr. 12
4 (from Khan al-Trab)	III	3 inscribed “bornes”	-	A.D. 293-305: <i>Diocletiano et Maximiano Augustis; Constantio et Maximiano Caesaribus</i> (Bauzou 1989a, nr. 14)	Dunand 1931, 236, 418 Bauzou 1989a, 269, Site 9, nr. 13-15
3 (from Khan al-Trab)	III	2 anepigraph “bornes” 1 inscribed “borne”	-	A.D. 293-305: <i>Diocletiano et Maximiano Augustis; Constantio et Maximiano Caesaribus</i>	Dunand 1931, 418; Bauzou 1989a, 269, Site 10, nr. 16
2 (from Khan al-Trab)	-	none	-	-	Dunand 1931, 418; Bauzou 1989a, 269, Site 11
1 (from Khan al-Trab)	-	2 anepigraph “bornes”	-	-	Dunand 1931, 418; Bauzou 1989a, 270, Site 12

– c) Khan al-Trab (*Vallis Diocletiana* = site nr. 18)¹³⁰⁵ – Khan al-Manquora (*Vallis Alba* = site nr. 17)¹³⁰⁶

Total distance in km: c. 28.6 km

Average of Roman mile:¹³⁰⁷ 1.576 km

Notes: watchtower at mile 3 from Khan al-Trab (Musil 1928, 105-109; Dunand 1931, 419; Bauzou 1989a, 270); watchtower of al-Hamra (Site nr. 20) probably at mile 8

Mile	Mile on stone	Number of milestones/stèles	Series	Dating	Bibliography
1 (from Khan al-Trab)= 1 km N-E from Khan al-Trab	none	1 anepigraph “bornes” 2 base of “bornes”	-	-	Dunand 1931, 419; Bauzou 1989a, 270, Site 14
2 (from Khan al-Trab)	illegible	1 anepigraph	-	-	Musil 1928, 105-109; ¹³⁰⁸ Dunand 1931, 419;

¹³⁰⁵ Bauzou 1989a, 270, Site 13.

¹³⁰⁶ Bauzou 1989a, 275-276, Site 30.

¹³⁰⁷ For the distances and value of the Roman mile in each sector I refer to Bauzou’s measurements (Bauzou 1989a, 295).

¹³⁰⁸ Musil noted at this location a milestone where he read VI.

		(?)”borne”			Bauzou 1989a, 270, Site 15
3 (from Khan al-Trab)	II[I] (Dunand)	1 anepigraph “borne” 1 erased “borne” 1 illegible “borne”	-	-	Dunand 1931, 419; Bauzou 1989a, 270, Site 16, nr. 17-18
4 (from Khan al-Trab)	illegible	2 anepigraph “bornes” 1 illegible “borne”	-	-	Dunand 1931, 419 Bauzou 1989a, 271, Site 17, nr. 19
5 (from Khan al-Trab)	-	none	-	-	Bauzou 1989a, 271, Site 18
6 (from Khan al-Trab)= 3km N-E from mile 4	illegible	4 inscribed “bornes” (but 2 illegible and 1 erased)	STRATA (Bauzou 1989a, nr. 23)	A.D. 293-305: <i>Diocletian[o] et Maximian[o] Augustis; Constantio et Maximiano Caesaribus</i> (Bauzou 1989a, nr. 23)	Dunand 1931, 237, 419; Bauzou 1989a, 271, Site 19, nr. 20-23
7 (from Khan al-Trab)	UII	2 anepigraph “bornes” 1 inscribed “borne”	-	-	Dunand 1931, 419; Bauzou 1989a, 271, Site 20, nr. 24
8 (from Khan al-Trab)	-	3 anepigraph “bornes” 1 inscribed but hammered “borne”	-	-	Dunand 1931, 419; Bauzou 1989a, , 272, Site 21, nr. 25
8 (from Khan al-Manquora)= 2km N-E from mile 7	VIII	2 anepigraph “bornes” 1 inscribed “borne”	ISTR	A.D. 324-326: <i>Costantino Maximo Augusto et Flavio Iulio Crispo, Claudio Constantino et Constantio Caesaribus</i>	Dunand 1931, 420; Bauzou 1989a, nr. 26
7(from Khan al-Manquora)	VII (Bauzou 1989a, nr. 28)	3 inscribed “bornes”	ISTRA (Bauzou 1989a, nr. 28)	A.D. 293-305: <i>Diocletiani et Maximiani Augustorum; Constanti et Maximiani Caesarum</i> (Bauzou 1989a, nr. 27)	Dunand 1931, 420; Bauzou 1989a, 272, Site 23, nr. 27-29
6 (from Khan al-Manquora)	VI	3 identical inscribed “bornes”	ISTRA	A.D. 324-326: <i>Costantino Maximo Augusto et Flavio Iulio Crispo, Claudio Constantino et Constantio Caesaribus</i>	Dunand 1931, 421; Bauzou 1989a, 273, Site 24, nr. 30-32
5 (from Khan al-Manquora)	V (Bauzou 1989a, nr. 34)	3 apparently identical inscribed “bornes” but 1 illegible	ISTRA (Bauzou 1989a, nr. 33- 34)	A.D. 324-326: <i>Costantino Maximo Augusto et Flavio Iulio Crispo, Claudio Constantino et Constantio Caesaribus</i> (Bauzou 1989a, nr. 33-34)	Dunand 1931, 422; Bauzou 1989a, 273, Site 25, nr. 33-35; 1993, 32 Inscr. C
4 (from Khan al-Manquora)	-	3 fragments of anepigraphic “bornes”	-	-	Dunand 1931, 422; Bauzou 1989a, 273, Site 26

		1 fragment with only CC inscribed			
3 (from Khan al-Manquora)= 1,8 km N-E from mile 4	III	1 anepigraphic fragment of “borne” 2 inscribed “bornes”	ISTRA (Bauzou 1989a, nr. 36)	A.D. 293-305: <i>Diocletiani et Maximiani Augustorum; Constanti et Maximiani Caesarum</i> (Bauzou 1989a, nr. 36) A.D. 324-326: <i>Costantino Maximo Augusto et Flavio Iulio Crispo, Claudio Constantino et Constantio Caesaribus</i> (<u>but over one from A.D. 293- 305 = Bauzou 1989a, nr. 37</u>)	Dunand 1931, 238, 422; Mouterde 1930, Pl. I.3; Bauzou 1989a, 274, Site 27, nr. 36-37
2 (from Khan al-Manquora)= 1,8 km N-E from mile 3	II (Bauzou 1989a, nr. 39)	1 anepigraphic “borne” 3 inscribed “bornes”	ISTRA (Bauzou 1989a, nr. 38, 40)	A.D. 293-305: <i>Diocletiani et Maximiani Augustorum; Constanti et Maximiani Caesarum</i> (Bauzou 1989a, nr. 38) A.D. 324-326: <i>Costantino Maximo Augusto et Flavio Iulio Crispo, Claudio Constantino et Constantio Caesaribus</i> (Bauzou 1989a, nr. 40)	Dunand 1931, 238, 422; Bauzou 1989a, 275, Site 28, nr. 38-40
1 (from Khan al-Manquora)= 1,8 km N-E from mile 2 and 1,1 km from Khan al- Manquora	I (Bauzou 1989a, nr. 41)	2 anepigraphic “bornes” 2 inscribed “bornes”	ISTRA (Bauzou 1989a, nr. 42)	A.D. 324-326: <i>Costantino Maximo Augusto et Flavio Iulio Crispo, Claudio Constantino et Constantio Caesaribus</i> (Bauzou 1989a, nr. 41-42 <u>but over one from A.D. 293-305</u>)	Dunand 1931, 239, 422-423; Mouterde 1930, 229 nr. 13; Bauzou 1989a, 275, Site 29, nr. 41-42; 1993, 37 Inscr. H
Khan al- Manquora	-	1 inscribed “borne” (north of the fort by a wall of the aqueduct)	ISTRA	A.D. 324-326: <i>Costantino Maximo Augusto et Flavio Iulio Crispo, Claudio Constantino et Constantio Caesaribus</i>	Bauzou 1989a, 275-276, Site 30, nr. 43

d) Khan al-Manquora (*Vallis Alba* = site nr. 17)¹³⁰⁹ – Khan Aneybeh (*NAB/Oneuatha* = site nr. 16)¹³¹⁰

Total distance in km: c. 12.2 km

Average of Roman mile:¹³¹¹ 1.220 km

Notes: watchtower at mile 4 from Khan al-Manquora (Bauzou 1989a, 278)

Mile	Mile on stone	Number of milestones/stèles	Series	Dating	Bibliography
1 (from Khan al-Manquora)= 1,1 km N-E from Khan al-Manquora	I (Bauzou 1989a, nr. 44)	2 inscribed “bornes”	ISTRA	A.D. 293-305: <i>Diocletiani et Maximiani Augustorum; Constanti et Maximiani Caesarum</i> (Bauzou 1989a, nr. 44) A.D. 324-326: <i>Costantino Maximo Augusto et Flavio Iulio Crispo, Claudio Constantino et Constantio Caesaribus</i> (Bauzou 1989a, nr. 45)	Dunand 1931, 240, 423; Bauzou 1989a, 276, Site 31, nr. 44-45; 1993, 30 Inscr. B (Fig. 2-3);
2 (from Khan al-Manquora)= 1,6 km N-E from mile 1	II (Bauzou 1989a, nr. 46, 48)	2 inscribed “bornes” 1 fragment of anepigraphic “borne”	ISTRA (?)	A.D. 293-305: <i>Diocletiani et Maximiani Augustorum; Constanti et Maximiani Caesarum</i> (Bauzou 1989a, nr. 46) A.D. 324-326: <i>Costantino Maximo Augusto et Flavio Iulio Crispo, Claudio Constantino et Constantio Caesaribus</i> (Bauzou 1989a, nr. 47-48)	Dunand 1931, 424; Bauzou 1989a, 276, Site 32, nr. 46-48
3 (from Khan al-Manquora)	III (Bauzou 1989a, nr. 49, 52)	2 inscribed “bornes” (1 illegible)	ISTRA (Bauzou 1989a, nr. 49, 51, 53,	A.D. 308-309: <i>Caio Galerio Maximiano aet Valerio Licinniano Licinio Inuictis</i>	Dunand 1931, 424; Mouterde 1930, 224 nr.11; Bauzou 1989a, , 277, Site 33, nr. 49-54

¹³⁰⁹ Bauzou 1989a, 275-276, Site 30.

¹³¹⁰ Bauzou 1989a, 279, Site 40.

¹³¹¹ For the distances and value of the Roman mile in each sector I refer to Bauzou’s measurements (Bauzou 1989a, 295).

			54)	<p><i>Augustis aet Galerio Valerio Maximo</i> (Bauzou 1989a, nr. 51)</p> <p>A.D. 324-326: <i>Costantino Maximo Augusto et Flavio Iulio Crispo, Claudio Constantino et Constantio Caesaribus</i> (Bauzou 1989a, nr. 49, 53?, 54)</p> <p>?? <i>Flavio Valerios Constantino Con[...] Augusto</i> (Bauzou 1989a, nr. 52)</p>	
4 (from Khan al-Manquora)= 1,6 km N-E from mile 3	III	2 inscribed "bornes" 1 anepigraphic "borne"	illegible	A.D. 324-326: <i>Costantino Maximo Augusto et Flavio Iulio Crispo, Claudio Constantino et Constantio Caesaribus</i>	Dunand 1931, 425; Bauzou 1989a, 277-278, nr. 55-56
5 (from Khan al-Manquora)= 1,6 km N-E from mile 4	V	2 inscribed "bornes" 2 anepigraphic "bornes"	ISTRA	A.D. 293-305: <i>Diocletiani et Maximiani Augustorun; Constanti et Maximiani Caesarum</i>	Dunand 1931, 240, 425; Mouterde 1930, 228 nr.10, Pl/ I,1-2; Poidebard 1934, Pl. XXVI, 1, 4; Bauzou 1989a, 277-278, Site 35, nr. 57-58
4 (from Khan Aneybeh)2 km N-E from mile 5	III	2 inscribed "bornes"	IST (Bauzou 1989a, nr. 60)	<p>A.D. 293-305: <i>Diocletiani et Maximiani Augustorun; Constanti et Maximiani Caesarum</i> (Bauzou 1989a, nr. 60)</p> <p>A.D. 324-326: <i>Costantino Maximo Augusto et Flavio Iulio Crispo, Claudio Constantino et Constantio Caesaribus</i> (Bauzou 1989a, nr. 59?)</p>	Dunand 1931, 425-426; Bauzou 1989a, 278, Site 36, nr. 59-60
3 (from Khan Aneybeh)	-	none	-	-	Bauzou 1989a, 279, Site 37
2 (from Khan Aneybeh)= 2 km N-E	II	2 inscribed "stèles"	illegible	A.D. 293-305: <i>Diocletiani et Maximiani Augustorun; Constanti et</i>	Dunand 1931, 426; Bauzou 1989a, 279, Site 38, nr. 61-62

from mile 4				<i>Maximiani Caesarum</i>	
1 (from Khan Aneybeh)	I	1 anepigraphic “borne” 1 fragment of inscribed “borne”	illegible	A.D. 293-305: <i>Diocletiani et Maximiani Augustorum; Constanti et Maximiani Caesarum</i>	Dunand 1931, 426; Bauzou 1989a, 279, Site 39, nr. 63

e) Khan Aneybeh (*NAB/Oneuatha* = site nr. 16)¹³¹² – al-Basiri (*Aura* = site nr. 15)¹³¹³

Total distance in km: c. 30.5 km

Average of Roman mile:¹³¹⁴ 1.452 km

Notes: at some point no milestones have been recovered neither by Mouterde, Dunand or Bauzou but the road’s path has been detected on the ground by Poidebard and it is clearly visible from the air.¹³¹⁵

Mile	Mile on stone	Number of milestones/stèles	Series	Dating	Bibliography
1 (from Khan Aneybeh)	-	2 anepigraphic “bornes”	-	-	Dunand 1931, 279, Site 41, 427
2 (from Khan Aneybeh)	II (Bauzou 1989a, nr. 64)	1 anepigraphic “borne” 1 anepigraphic “stèle” 2 inscribed “bornes”	ISTRA (Bauzou 1989a, nr. 64)	A.D. 293-305: <i>Diocletiani et Maximiani Augustorum; Constanti et Maximiani Caesarum</i> (Bauzou 1989a, nr. 64) A.D. 306-307 ? : <i>Maximiano Seuero Augustis</i> (Bauzou 1989a, nr. 65)	Dunand 1931, 427; Bauzou 1989a, 279-280, Site 42, nr. 64-65
3 (from Khan Aneybeh)	illegible	1 anepigraphic “borne” 2 anepigraphic “stèles” 2 inscribed “bornes” (1 very damaged)	ISTRA (Bauzou 1989a, nr. 67)	A.D. 293-305: <i>Diocletiani et Maximiani Augustorum; Constanti et Maximiani Caesarum</i> (Bauzou 1989a, nr. 67)	Dunand 1931, 427-428; Bauzou 1989a, 280, Site 43, nr. 66-67
4 (from Khan Aneybeh)	IIII	4 anepigraphic	illegible	A.D. 305-306	Dunand 1931, 428;

¹³¹² Bauzou 1989a, 279, Site 40.

¹³¹³ Bauzou 1989a, 283-283, Site 61.

¹³¹⁴ For the distances and value of the Roman mile in each sector I refer to Bauzou’s measurements (Bauzou 1989a, 295).

¹³¹⁵ Poidebard 1934, Pl. XXIX; Bauzou 1989a, 282.

Aneybeh)	(Bauzou 1989a, nr. 69)	“bornes” 2 small anepigraphic “stèles” 2 inscribed “stèles” (1 illegible)		(?): <i>Costantio et Maximiano</i>	Bauzou 1989a, 280, Site 44, nr. 68-69
5 (from Khan Aneybeh)	V (Bauzou 1989a, nr. 71)	2 inscribed “bornes”	illegible	A.D. 293-305: <i>Diocletiani et Maximiani Augustorun; Constanti et Maximiani Caesarum</i> (Bauzou 1989a, nr. 70?) A.D. 305-306: <i>Costantio et Maximiano Augustis et Seuero et Maximino Caesaribus</i> (Bauzou 1989a, nr. 71)	Dunand 1931, 241, 428; Bauzou 1989a, 280-281, Site 45, nr. 70-71
6 (from Khan Aneybeh)	illegible	“au moin” 2 inscribed “bornes”	ISTRA (Bauzou 1989a, nr. 73)	A.D. 305-306 (?) <i>Costantio et Maximiano Augustis et Seuero</i> (Bauzou 1989a, nr. 72) A.D. 293-305 or 324-326 (Bauzou 1989a, nr. 73)	Dunand 1931, 429; Bauzou 1989a, 281, Site 46, nr. 72-73 (500m from nr. 72)
7 (from Khan Aneybeh)	illegible	2 anepigraphic “bornes” 1 inscribed “borne”	ISTRA	A.D. 293-305: <i>Diocletiani et Maximiani Augustorun; Constanti et Maximiani Caesarum</i>	Dunand 1931, 429; Bauzou 1989a, 281, Site 47, nr. 74
8 (from Khan Aneybeh)	VIII	1 anepigraphic “borne” 1 big anepigraphic “stèle” 1 big “stèle” inscribed”	illegible	-	Dunand 1931, 429; Bauzou 1989a, 281, Site 48, nr. 75
9 (from Khan Aneybeh)	-	2 fragments of inscribed “bornes”	ISTRA (Bauzou 1989a, nr. 76)	A.D. 293-305: <i>Diocletiani et Maximiani Augustorun; Constanti et Maximiani Caesarum</i> (Bauzou 1989a, nr. 76-77?)	Dunand 1931, 241, 429; Bauzou 1989a, 281, Site 49, nr. 76-77
10-21?	-	none	-	-	Dunand 1931, 430; Bauzou 1989a, 282, Site 50-60

f) Al-Basiri (*Aaira* = site nr. 15)¹³¹⁶ – Khan al-Qattar (*Carnela* = site nr. 14)¹³¹⁷

Total distance in km: *c.* 21.3 km

Average of Roman mile:¹³¹⁸ 1.420 km

Notes: none

Mile	Mile on stone	Number of milestones/stèles	Series	Dating	Bibliography
1-12 (from al-Basiri)	-	none	--	-	Dunand 1931, 430; Bauzou 1989a, 283, Site 62-73
13 (from al-Basiri) = 3 km W of Khan al-Qattar	XIII	1 anepigraphic “fût cylindrique” 1 inscribed “fût cylindrique”	S(TRATA?) DIOCLETIANA	After A.D. 284: <i>Strata Diocletiana</i>	Dunand 1931, 247, 430; Bauzou 1989a, 283, Site 74, nr. 78; 1993, 43 Inscr. J
14 (from al-Basiri)	-	none	-	-	Dunand 1931, 430; Bauzou 1989a, 283, Site 75
Khan al-Qattar = 15 miles from al-Basiri)	XV (Bauzou 1989a, nr. 79)	3 inscribed “bornes” (200m west of the fort)	STRATA DIOCLETIANA (Bauzou 1989a, nr. 79-80)	After A.D. 284: <i>Strata Diocletiana</i>	Dunand 1931, 247, 430; Bauzou 1989a, 283,-284, Site 76, nr. 79-81(the last one perhaps non in situ); 1993, 42 Inscr. I

g) Khan al-Qattar (*Carnela* = site nr. 14)¹³¹⁹ – Khan al-Hallabat (*Beriaraca* = site nr.13)¹³²⁰

Total distance in km: *c.* 28.2 km

Average of Roman mile:¹³²¹ 1.659 km

Notes: water point stop at al-Hawa (site nr. 5)

Mile	Mile on stone	Number of milestones/stèles	Series	Dating	Bibliography
1 (from Khan al-Qattar)	-	none	-	-	Dunand 1931, 431; Bauzou 1989a, 284, Site 77
2 (from Khan al-	illegible	1 inscribed “fût cylindrique”	STRATA DIOCLETIA-	After A.D. 284: <i>Strata Diocletiana</i>	Dunand 1931, 247, 430; Bauzou 1989a, 284, Site 78,

¹³¹⁶ Bauzou 1989a, 282-283, Site 61.

¹³¹⁷ Bauzou 1989a, 283-284, Site 76.

¹³¹⁸ For the distances and value of the Roman mile in each sector I refer to Bauzou’s measurements (Bauzou 1989a, 295).

¹³¹⁹ Bauzou 1989a, 283-284, Site 76.

¹³²⁰ Bauzou 1989a, 286, Site 93.

¹³²¹ For the distances and value of the Roman mile in each sector I refer to Bauzou’s measurements (Bauzou 1989a, 295).

Qattar)= 3 km from Khan al-Qattar			NA		nr. 82
3-6 (from Khan al- Qattar)	-	none	-	-	Dunand 1931, 431; Bauzou 1989a, 284, Site 79- 82
7 (from Khan al- Qattar)= 8 km from mile 2	[V]II	1 inscribed “fût cylindrique”	STRATA DIOCLETIA- NA	After A.D. 284: <i>Strata Diocletiana</i>	Dunand 1931, 431; Bauzou 1989a, 284, Site 83, nr. 83
8 (from Khan al- Qattar)= 1,5 km from mile 7	VI[I]I (Bauzou 1989a, nr. 84)	2 inscribed “fût cylindrique”	STRATA DIOCLETIA- NA	After A.D. 284: <i>Strata Diocletiana</i>	Dunand 1931, 432; Mouterde 1930, 226 nr.8; Bauzou 1989a, 285, Site 84, nr. 84-85
9 (from Khan al- Qattar)	-	none	-	-	Dunand 1931, 432; Bauzou 1989a, 285, Site 85
10 (from Khan al- Qattar)= 3 km from mile 8	-	1 inscribed “fût cylindrique” 1 anepigraphic “fût cylindrique” 1 “troncon de colonnette” anepigraphic	STRATA DIOCLETIA- NA	After A.D. 284: <i>Strata Diocletiana</i>	Dunand 1931, 432; Mouterde 1930, 226 nr.7; Bauzou 1989a, 285, Site 86, nr. 86
11 (from Khan al- Qattar)	-	1 inscribed “fût cylindrique” 1 anepigraphic “fût cylindrique”	STRATA DIOCLETIA- NA	After A.D. 284: <i>Strata Diocletiana</i>	Dunand 1931, 432-433; Bauzou 1989a, 285, Site 87, nr. 87
12 (from Khan al- Qattar)	-	none	-	-	Dunand 1931, 433; Bauzou 1989a, 286, Site 88
13 (from Khan al- Qattar)= 3 km from mile 11	-	1 fragment of anepigraphic “fût cylindrique” ¹³²²	-	-	Dunand 1931, 433; Bauzou 1989a, 286, Site 89
14 (from Khan al- Qattar)= 2 km from mile 12	-	1 fragment of anepigraphic “fût cylindrique”	-	-	Dunand 1931, 433; Bauzou 1989a, 286, Site 90
15-16 (from Khan al- Qattar)	-	none	-	-	Dunand 1931, 433; Bauzou 1989a, 286, Site 91- 92
Khan al- Hallabat	illegible	2 inscribed “bornes” (in front of the fort’s entrance)	STRATA DIOCLETIA- NA	After A.D. 284: <i>Strata Diocletiana</i>	Dunand 1931, 242, 433; Bauzou 1989a, 286, Site 93, nr. 88-89

h) Khan al-Hallabat (*Beriaraca* = site nr.13)¹³²³ –Palmyra (Efqa spring)

Total distance in km: c. 28 km

Average of Roman mile:¹³²⁴ 1.473 km

¹³²² The unknown milestone published by Bauzou 1993, 33 Inscr. E (Fig. 15) found not in situ 5 km E of Khan al-Hallabat comes probably from here (mile XIII).

¹³²³ Bauzou 1989a, 286, Site 93.

Notes: stop of Khan al-Abyad (Site nr. 11) at mile 5 (?)

Mile	Mile on stone	Number of milestones/stèles	Series	Dating	Bibliography
1 (from Khan al-Hallabat)	-	None ¹³²⁵ (but at 2,1 km of Khan al-Hallabat an anepigraphic column)	--	-	Bauzou 1989a, 286-287, Site 94
2 (from Khan al-Hallabat) 3,8 km N-E of Khan al-Hallabat	II	1 inscribed “fût cylindrique” 3 fragments of anepigraphic “bornes”	STRATA DIOCLETIANA	After A.D. 284: <i>Strata Dioclettiana</i>	Dunand 1931, 243, 433-434; Bauzou 1989a, 287, Site 95, nr. 90; 1993, 34 Inscr. F
3 (from Khan al-Hallabat)=1,55 km from previous mile and aligned with Khan al-Hallabat and mile 4	-	3 fragments of anepigraphic “fût de colonne, tronconique et cylindrique” + probably 2 inscribed “bornes” from 2h 15’ N-N-W from Palmyra (CIL 14177 (4)=mile III and XVI)	-	-	Kalinka 1900, 23-24 nr. 8 = <i>CIL</i> , III, 14 177 (4) = <i>AE</i> 1993, 1606 = Bauzou 1989a, 287, Site 96, nr. 113-114 and 1993, 45
4 (from Khan al-Hallabat)=1,55 km from mile 3	Illegible	2 inscribed “fût de colonnes” 1 anepigraphic “fût de colonne”	Illegible	A.D. 309-311: Constantine <i>Aug.</i> (Bauzou 1989a, nr. 95) A.D. 309-311: <i>Aug. Licinni</i> (Bausou 1989a, nr. 96)	Bauzou 1989a, 87, Site 96, nr. 95-96
5 (from Khan al-Hallabat)=1 km S of Khan al-Abyad	Illegible	1 anepigraphic “fût de colonne” non <i>in situ</i> , probably coming from Khan al-Abyad where at the entrance an inscribed “bornes” has been found	Illegible	A.D. 309-311: Constantine <i>Aug.</i>	Dunand 1931, 243; Bauzou 1989a, 288, Site 98, nr. 97
6-8 (from Khan al-Hallabat)	-	none	-	-	Bauzou 1989a, 289, Site 99-101
9 (from Khan al-Hallabat)	-	9 similar fragments = 5 “fût de colonnes” (?) – 3 inscribed	-	??? Bauzou 1989a, nr. 99 (hammered): <i>AUG. Licinni</i> (?) Bauzou 1989a, nr. 100: <i>NOS</i> (?) Bauzou 1989a, nr. 101:	Bauzou 1989a, 89, Site 102, nr. 99-101

¹³²⁴ For the distances and value of the Roman mile in each sector I refer to Bauzou’s measurements (Bauzou 1989a, 295).

¹³²⁵ The two milestones found at al-Bakhra (Bauzou 1989a, nr. 111-112) come originally probably from this place. B111 mentions *Strata Dioclettiana*.

				C[...] <i>AVI</i> [..]	
10 (from Khan al-Hallabat)= 1,5 km from mile 9	-	4 fragments of “fût”	-	-	Bauzou 1989a, 290, Site 103
11-13 (from Khan al-Hallabat)	-	none ¹³²⁶	-	-	Bauzou 1989a, 290, Site 104-106
14 (from Khan al-Hallabat)= 5,9 km N-E mile 10 and 7,3 km S-W of Hotel ex-Méridien	illegible	1 anepigraphic “fût de colonne” 1 inscribed “fût cylindrique”	illegible	A.D. 309-311 (?): I.1 = <i>L</i> (hammered) A.D. 324-337 (?): <i>CONSTAN[.]ION C.</i>	Bauzou 1989a, 290-291, Site 107, nr. 102
15 (from Khan al-Hallabat)	-	none	-	-	Bauzou 1989a, 291, Site 108
16 (from Khan al-Hallabat)= 4,3 km S-W of Hotel ex-Méridien	-	1 anepigraphic “fût cylindrique” 1 inscribed “fût cylindrique”	-	A.D. 309-311: <i>Aug.</i> <i>Constantine</i>	Bauzou 1989a, 291, Site 109, nr. 103
17-19 (from Khan al-Hallabat) = Efqa spring	-	-	-	-	Bauzou 1989a, 293-294

i) Khan al-Hallabat (*Beriaraca* = site nr.13)¹³²⁷ – Al-Bakhra (*Auatha* = site nr. 8)

Total distance in km: *c.* 16

Mile	Mile on stone	Number of milestones/stèles	Series	Dating	Bibliography
7 (from al-Bakhra)5 km E-N-E of Khan al-Hallabat	VII (Bauzou 1989a, nr. 91-092)	3 similar “fût cylindrique” (1 broken in 2 pieces and very damaged)	STRATA DIOCLETIANA (Bauzou 1989a, nr. 91-92)	After A.D. 284: <i>Strata Diocletiana</i> (Bauzou 1989a, nr. 91-92 ll. 6-9) A.D. 293-305: <i>Diocletiano et Maximiano Augustis;</i> <i>Constantio et Maximiano Caesaribus</i> (Bauzou 1989a, nr. 91-92, ll.1-5)	Bauzou 1989a, nr. 91-93; 1993, 34 Inscr. G

l) Unlocated milestones: Bauzou 1989a, nr. 94 (*Licinni*); 97 (*Constanti[n]e Aug.*), 98 (*Aug. Constantine*)

¹³²⁶ The supposed path of the ancient road is covered in this stretch by the modern one (Bauzou 1989a, 290).

¹³²⁷ Bauzou 1989a, 286, Site 93.

m) Milestones not *in situ* but coming from the *Strata Diocletiana*:

- Place: 2 hours and 15 minutes W/N-W from Palmyra (Kalinka 1900, 23)

Inscription: [...] *Nobil(issimo) Caes(ari) Col(onia)/Palm(yra). Mil(ia passuum) III.*

[...] (?) *A Palmyrae (f)on/tibus Beriarac. M(ilia passuum) XVI*

Dating: 4th century A.D. ?

Bibliography: Kalinka 1900, 23-24 nr. 8 = *CIL*, III, 14 177 (4) = Thomsen 1917, 27 nr. 45a1-2 = *AE* 1993, 1606 = Bauzou 1989a, nr. 113-114 and 1993, 45 Inscr. K

- Place: al-Bakhra

Inscription: *Strata/ Diocletiana/ [a] Beri[a]raca Pa[lmyra]/ (milia passuum) I[...]*

Dating: after A.D. 284

Bibliography: *CIL*, III, 6726 = Thomsen 1917, 29 nr. 57a1=Bauzou 1989a, nr. 111

- Place: al-Bakhra

Inscription: *D(omino) N(ostro)*

Dating: Constantine Caesar ? (A.D. 324-327)

Bibliography: Bauzou 1989a, nr. 112

- Place: 5 km East of Khan al-Hallabat

Inscription: *Stra[t]a Diocletiana/ a Carnela / Beriaraca / mil(ia) XIII*

Dating: 4th century A.D. ?

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